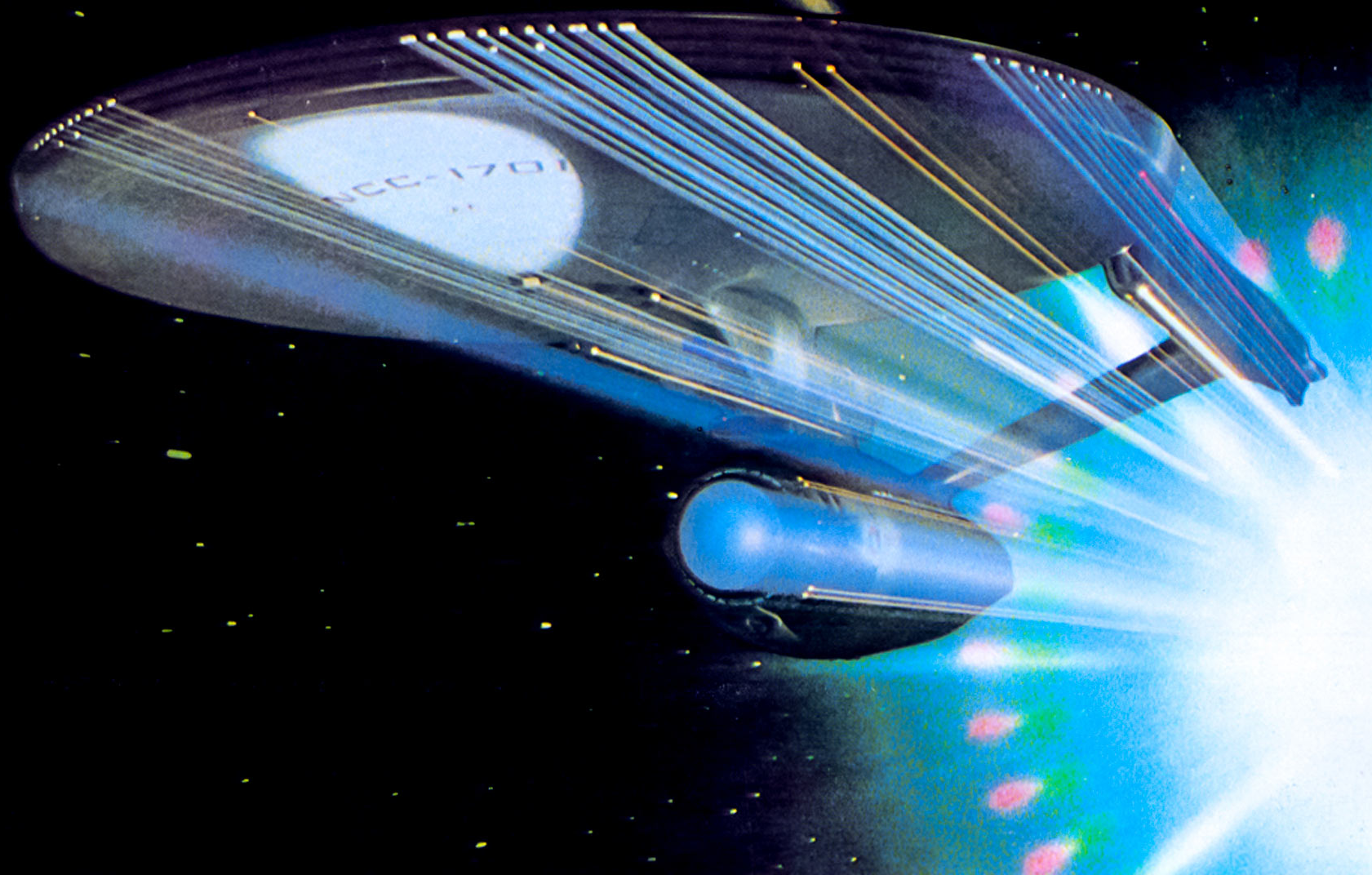


cinefex

number 1
\$3.50





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CINEFEX 1 — March 1980. Published triannually at P.O. Box 20027, Riverside, California 92516. Subscription rate: four issues — \$12. Foreign subscriptions payable in U.S. funds only. Dealer rates available upon request. Return postage must accompany all unsolicited manuscripts, photos, or other materials. Printed by R.B. Graphics, Riverside, California; typesetting by Creative Concepts, Riverside, California. Contents copyright © 1980 by Don Shay. All rights reserved. Reproduction in whole or in part without permission is prohibited.

Into the V'ger Maw with Douglas Trumbull 4

With only nine months remaining before its world premiere, Douglas Trumbull stepped in as director of special effects for *Star Trek — The Motion Picture*. Five hundred effects shots later, the multimillion dollar space epic was completed — on schedule. Trumbull discusses with candor the organizational and technical shortcomings which led to the dismissal of the original effects unit, and his own subsequent efforts to salvage the beleaguered production. In addition to his personal redesign of the effects sequences, Trumbull details the extensive research and development effort, the crushing workload, and the specific techniques employed in achieving many of *Star Trek's* most spectacular moments. *Interview by Don Shay.*

Creating an Alien Ambience 34

As had no other film before, *Alien* was utterly successful in attaining a convincing depiction of alien lifeforms, artifacts and environs. Conceived first in the mind of screenwriter Dan O'Bannon, and then translated into visual terms by surrealist painter H.R. Giger, *Alien* was not only a consummate shocker, but also a work of great aesthetic virtuosity. Particularly demanding was the alien polymorph — from its earliest forms constructed by Roger Dicken to the full-size monstrosity sculpted by H.R. Giger and activated by Carlo Rambaldi. Equally of note were the complex otherworld sets built under the supervision of production designer Michael Seymour, and the extensive special effects engineered by Brian Johnson and Nick Allder. These and other craftsmen discuss in detail the collaborative effort behind *Alien's* pervasive atmosphere of eerie realism. *Article by Don Shay.*

FRONT COVER — Breaking the light barrier in *Star Trek — The Motion Picture*.
The final confrontation from *Alien* — BACK COVER.

During promotional appearances for *Close Encounters of the Third Kind*, special effects maestro Douglas Trumbull was prone to cite a spiritual kinship between the modern effects technician and the classical magician — an apt comparison considering both specialize in the manipulation of reality. The analogy becomes even more cogent, however, in the aftermath of *Star Trek — The Motion Picture*. Faced with unprecedented special effects requirements and an unalterable deadline, an army of some two hundred master illusionists embarked on a massive campaign to complete the imperiled production, climaxing in a last-minute race against time that was in many respects more suspenseful than the \$42 million epic they were striving to salvage. Despite predictions to the contrary, the seemingly impossible was accomplished — and with such finesse as to belie both the extent of the task and the enormity of the achievement.

Well before the March 1978 press conference called to herald the commencement of *Star Trek — The Motion Picture*, Paramount had approached Douglas Trumbull with the intent of engaging him as director of special effects. Trumbull was clearly the logical first choice for the job. A veritable wizard with light and one of the first to apply space-age technology to the realm of photographic effects, Trumbull had cut his teeth on the paragon of science fiction films, *2001: A Space Odyssey*, and had later written, directed, and supervised the effects for *Silent Running*. Moreover, his *Future General Corporation* was a subsidiary of Paramount Pictures. Trumbull, however, declined the *Star Trek* assignment. He was already deeply involved in *Close Encounters of the Third Kind*, and following that intended to launch his own feature employing an innovative new film process he had developed. The only other special effects supervisor with anything resembling Douglas Trumbull's qualifications was *Star Wars* veteran John Dykstra, but he had prior commitments to another production.

Ultimately, Paramount elected to go with Robert Abel and Associates, a prestigious graphic effects firm whose television commercials for 7-Up and Levi Strauss number among the medium's most visually spectacular. The Abel organization quickly acquired a new building to accommodate the *Star Trek* workload and began amassing equipment and personnel. Douglas Trumbull, meanwhile, completed work on *Close Encounters* and launched immediately into the preparation of a demonstration reel designed to secure Paramount backing for a full-blown feature employing his new process. Paramount, however, turned thumbs down on the proposal, and instead put *Future General* in mothballs — a move judged by some as a slap at Trumbull for passing on *Star Trek* and an incentive for his laid-off technicians to join Abel's newly-formed effects unit.

Star Trek had been underway — and under wraps — for nearly a year before persistent rumors began to surface regarding problems with the special effects. Even though literally millions of dollars had already been expended, virtually

nothing in the way of usable footage had yet been produced. More directly, Paramount was committed to a nationwide theatrical blitz geared to kick off in December 1979, and was now facing the very real likelihood that the picture would not be finished in time. As principal photography drew to a close, the situation escalated to crisis proportions, culminating in a terse statement from the studio — Paramount and Robert Abel had parted company.

With only nine months remaining of the original twenty-one allocated for the job, Douglas Trumbull stepped in as director of special effects. Without margin for error or delay, Trumbull and long-time associate Richard Yuricich reassembled the *Close Encounters* crew, brought in John Dykstra and his Apogee, Inc., and rammed the *Star Trek* special effects through to completion. In the process, nearly five hundred special effects cuts were produced — more than for any motion picture ever made, and in less than half the time of either *Star Wars* or *Close Encounters of the Third Kind*.

It was an uphill battle all the way — twenty-four hours a day, seven days a week. Hundred-hour workweeks were not uncommon. Near the end of production, Trumbull admitted to not having had a day off in four months — nor had many of his key personnel. A week before the Washington D.C. world premiere, opticals were still in progress. Completed scenes were being cut into the master negative on a daily basis; and individual reels, as completed, were rushed to the lab for mass reproduction. A final composite print of the entire film was not in hand until the day before the premiere.

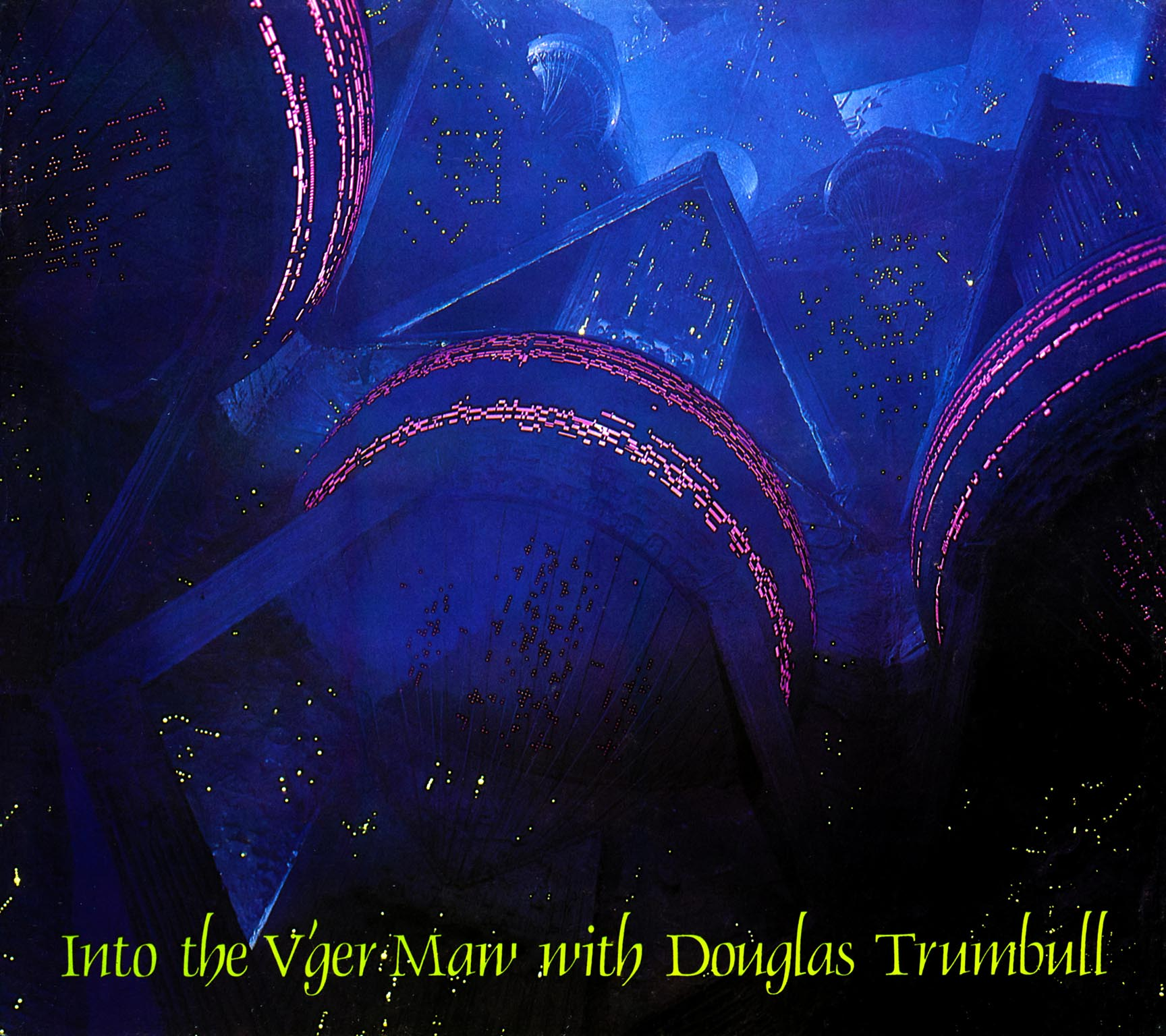
But it was finished.

It's pretty well known that you flatly refused to do *Star Trek* when the film first started up. And yet, months later, when the production was in real trouble, you decided to step in and take over. What changed your mind?

Well, I was never really interested in the project. I'd been approached in a roundabout way several times, and there were even some vague innuendos at one point that I might direct it. But by the time the final commitment had been made to do *Star Trek* as a motion picture, I was in the throes of finishing up on *Close Encounters* and was having a pretty difficult time with Paramount. I was under exclusive contract with them as part of the *Future General* deal, but Paramount didn't seem to be interested in working with me as a director — nor were they inclined to let me explore any outside possibilities. So ultimately I just swore that *Close Encounters* was going to be the last time I would have anything to do with cranking out special effects for another director or be forced to render services to Paramount which were not included in my contract.

interview by
Don Shay

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Into the V'ger Man with Douglas Trumbull



Since I refused to do the effects for *Star Trek*, and since John Dykstra was totally immersed in the preparation of *Altered States*, Paramount made a decision to go with Robert Abel and Associates. Abel had a fine track record for spectacularly complicated visual effects television commercials, and the choice seemed a pretty good one. It was not until quite a few months had gone by that it started becoming clear that the Abel organization was not experienced in feature motion picture production and was going through a deep learning curve — and Paramount was beginning to get a bit nervous about it.

Dick Yuricich was brought in as sort of a liaison between Robert Abel and the studio so Paramount could have someone on hand to advise them on the complexities of special effects. And they were also using me as a sounding board because my contract with them had built into it a clause which stated that I would render services as a consultant from time to time on feature film projects. So I interfaced with Abel's group as much as I could without actually interfering in their creative processes — and, in fact, they had a lot of exotic, sophisticated, and exciting ideas. But having just come off *Close Encounters*, I was very much aware of how much time it takes to do this kind of work; and the more I saw, the more it became clear to me that Paramount was already in enormous trouble.

Nobody is aware, but at one point, in about August of '78, I went to the studio with an offer to step in and *do* the *Star Trek* effects with Dick Yuricich — with part of the deal being that in addition to paying me very well, Paramount would release me from my contract upon completion of the film. But Paramount didn't take the situation as seriously as I did at the time and turned me down. By the time they realized how much trouble they were in, they would have entertained *anybody* who could have walked in the door and been able to pull them out of the jam. So we finally struck an arrangement that was mutually beneficial — Paramount would get their picture delivered on time, and I would get my freedom.

At what point in time was this?

Well, there was actually a transitional period where I agreed to a three-month contract for January, February, and March 1979, to simply assist as a consultant. Dick Yuricich was already involved, and the idea was to extract from Abel the responsibility for shooting miniatures and matte paintings — which didn't seem to be up their alley — leaving behind all the graphic effects and optical stuff that was really their forte in the commercial business. We felt that would probably solve the problem. So we immediately reopened the Glencoe facility — where most of *Close Encounters* had been shot — and just started whipping things together. In a few weeks we were up and running; but as time went on, it became increasingly clear to Paramount that in spite of the fact that Abel had been relieved of essentially half the work, they were still not going to be able to get even the other half done in time. A lot of complicated legal issues had to be addressed, but by the first of March, Abel was out and we had taken on the entire project.

Judging from their prior work, the Abel organization certainly seemed to have the technological expertise needed for Star Trek. Were they trying to be overly sophisticated, or were they just operating out of their league?

There were a lot of factors involved. One, which didn't become apparent until later, was that a number of their most successful television commercials had been produced by talented people who were no longer with the organization; so they were partially depleted creatively.

But more than that, I think, was their overall approach to the project. They *did* attempt some really exciting technological advancements through computer technology, primarily involving the development of an *extremely* complex programming technique that employed time-sharing terminals throughout their building so that any number of cameras could be operated simultaneously from a central computer. They also rigged up a very sophisticated Evans and Sutherland computer display system for graphic imaging of all the spacecraft and models. With the Evans and Sutherland, they could program in the size and scale of a model, the manner in which it was mounted on its pylon, where the center of gravity was to be, what sorts of velocities were involved, as well as appropriate information on the camera and the lenses, and then display a graphic representation of the model in three dimensions on a CRT [cathode ray tube]. It was extremely advanced technologically and required an enormous amount of software development, but they were very enthusiastic about the whole concept and felt that by using it they would be able to program all the motion control photography without ever having to touch a model or look through a camera viewfinder. Using the Evans and Sutherland display capability, the programmer could devise and preview a model move, which would then be translated into an appropriate interaction of moves between the model itself and the camera. These would be recorded on a floppy disc, which would then be taken over to another building where the models were to be photographed, and fed into the motion control system. The problem was that the camera operators and the people actually on the stage weren't able to interact at all with the camera or the model, even if something went wrong. So if a situation arose where the programmer had not anticipated that for a certain angle the magazine of the camera would bang into the drydock roof — something simple like that — then the guys on the stage would not be able to reprogram the machine right there and adjust for it. Instead, the entire shoot would have to be cancelled and a memo sent back to the main building for someone to reprogram the shot, which might take hours or days.

Beyond that, though, the entire philosophy of the system overlooked the fact that a special effects shot is ultimately the end result of a very complicated system of aesthetic judgments which are based upon actually looking at a model under precise lighting conditions and through a certain focal length lens for a particular aesthetic appeal. And that's something

you simply cannot duplicate on a CRT where the model is being shown to you in schematic form without any modeling, coloration, texture, or whatever. It isn't even possible to guess at the scale of a model under those circumstances.

Another fundamental problem with their approach to model photography was that they planned to shoot each frame of film from a discrete, static position so the image would always be perfectly sharp — like stop-motion animation. That way, if they needed to add blinking lights or fog filters or warp engine effects, they could avoid doing multiple passes by cycling the camera through a series of separate exposures, compositing maybe three or four elements onto one frame before proceeding to the next. What they didn't account for is the fact that even though the exposures would be very long, the camera would still be running hypothetically at twenty-four frames per second, and that when you generate perfectly sharp images on film you get a definite stroboscopic effect, particularly when the movement is fast. You don't when your camera's running at speed because there's always a certain amount of natural blur that's recorded while the shutter's open, and that tends to smooth out the jump from frame to frame. So for that reason, all the systems *we* use have been designed to incorporate that natural blur.

Plus, the whole project had been sold as a big 70mm effects production; but they were never able, in thirteen months' time, to get their 70mm cameras rolling — that despite the fact that Paramount had gutted Future General when *Star Trek* started up. Abel had all the *Close Encounters* equipment — all the 65mm printers, all the cameras, all the optical equipment. But they didn't have the organization and the experience to get it all up and running again.

Once you took over, did you have to accumulate all new equipment?

No, we got our original stuff back, along with some of the equipment Abel had sort of half gotten built. We started gathering together most of the old *Close Encounters* crew and immediately went into a high-pressure redesign phase. In fact, in a very real sense the entire movie was restructured from a visual point of view. Most of the effects sequences had been storyboarded, but they just didn't make sense in terms of screen direction and model scale and achievable angles. So we had to re-storyboard every major sequence in the film based upon an understanding of what's really achievable with models — how close you can get, how fast you can move, what kinds of angles are possible, and what lighting works best.

Plus we had to get our facilities back in shape. At full operational capacity, the Glencoe facility had administrative offices for the effects unit, three optical printers, optical line-up facilities, a matte stand and matte painting rooms, editorial facilities, a 65mm black-and-white processor for test and mattes, and complete machine and wood shops. It also had one official stage — the smoke room where the *Close Encounters* saucers were shot — with a track and motion control

Effects wizard Douglas Trumbull confers with Star Trek director Robert Wise during a break in post-production shooting. Although principal photography was nearly complete by the time Trumbull joined the foundering epic, his strong visual aesthetic significantly altered the picture's overall look. Starting virtually from scratch, and pitted against a killer deadline, Trumbull and his associates completed nearly five hundred special effects cuts in only nine months.

Most of the shots in the drydock sequence were comprised of numerous elements, photographed individually and composited in the optical printer. The Enterprise and drydock were first to go before the cameras, thus providing a central frame of reference against which other elements — ranging from transport vessels and weightless astronauts to earth paintings and star backgrounds — could be gauged. / All the basic models used in the segment were constructed by Magicam and then detailed in-house at the effects facility. Model craftsmen Mark Stetson and Kris Gregg work on either end of the cargo carrier which dominates the workshop. The small workbee, being detailed by Russ Simpson, was designed to operate independently or as a tug for the cargo modules. In the rear, assistant cameraman Scott Farrar watches Ron Gress put finishing touches on the air tram used in the San Francisco sequence. Bruce Bishop is in right foreground.

system in it. We knew that wasn't going to be adequate, though; so we leased the Maxella facility about two blocks away and set up five complete stages equipped with various kinds of tracks and camera systems. Bo Gehring, whom I'd known for several years, had worked out a simplification in the manufacturing process for motion control systems and was able to produce four additional units for us on fairly short order. In addition to the stage space, Maxella also had two Oxberry animation stands, a full color darkroom, a small model shop, and a screening room for both 35- and 70mm. Then we took over still another building nearby — the Beach facility — which became the art department and housed the rotoscope equipment plus workrooms for our animation staff and all our designers and illustrators.

Since principal photography was nearly completed by the time you came on the picture, how much creative input were you able to make to the film as a whole?

As it turned out, quite a lot. The Spock spacewalk, for example, is a total one hundred percent change from the sequence that was designed, built, and photographed under Abel's supervision. Both versions start out the same — the *Enterprise* is stuck inside V'ger and no one knows what's going on; so Spock commandeers a spacesuit and goes outside to snoop around. In the original, however, when Kirk discovers Spock's out there, he gets on a spacesuit and goes after him — in the process of which he's caught up in a mass of sensor-type organisms and nearly killed. Of course, Spock comes back and saves the day, and the two of them continue on together through several different chambers in the V'ger ship.

The problem was that Bob Wise and Dick Kline and Bob Abel didn't seem to be able to come to an agreement on how to go about photographing it. So they ended up building these monstrous sets of the V'ger interior; and then they spent days and days and days on the stage hanging people on wires and laboriously shooting this thing cut by cut — and there were just all kinds of things wrong with it. First off, the spacesuits were horribly designed, and would have gotten laughed off the screen when compared with any space film since 2001; plus they had a lot of problems with reflections on the helmet faceplates. The wire stuff was slow and ungainly, and took just forever to play out. And I thought the business of Kirk getting caught up in this dumb internal protective organism was totally disruptive to the general flow of the story.

Sounds kind of like Fantastic Voyage.

It was exactly like *Fantastic Voyage*, when Raquel Welch gets glommed onto by the antibodies. We had a screening of the roughcut, and when it came to the spacewalk the whole movie just fell apart. What they'd done was produce a very literalized and simplistic version of a concept which in the script was really kind of mind-boggling. And in spite of the fact that they'd already spent a million dollars on the sequence, it was apparent to me that it was going to cost about half of our total special effects budget and most of our resources just to save it

with matte paintings and opticals and make the effects work somewhat as designed. But even at best I never thought it was going to net a very exciting result because the whole concept was just boring.

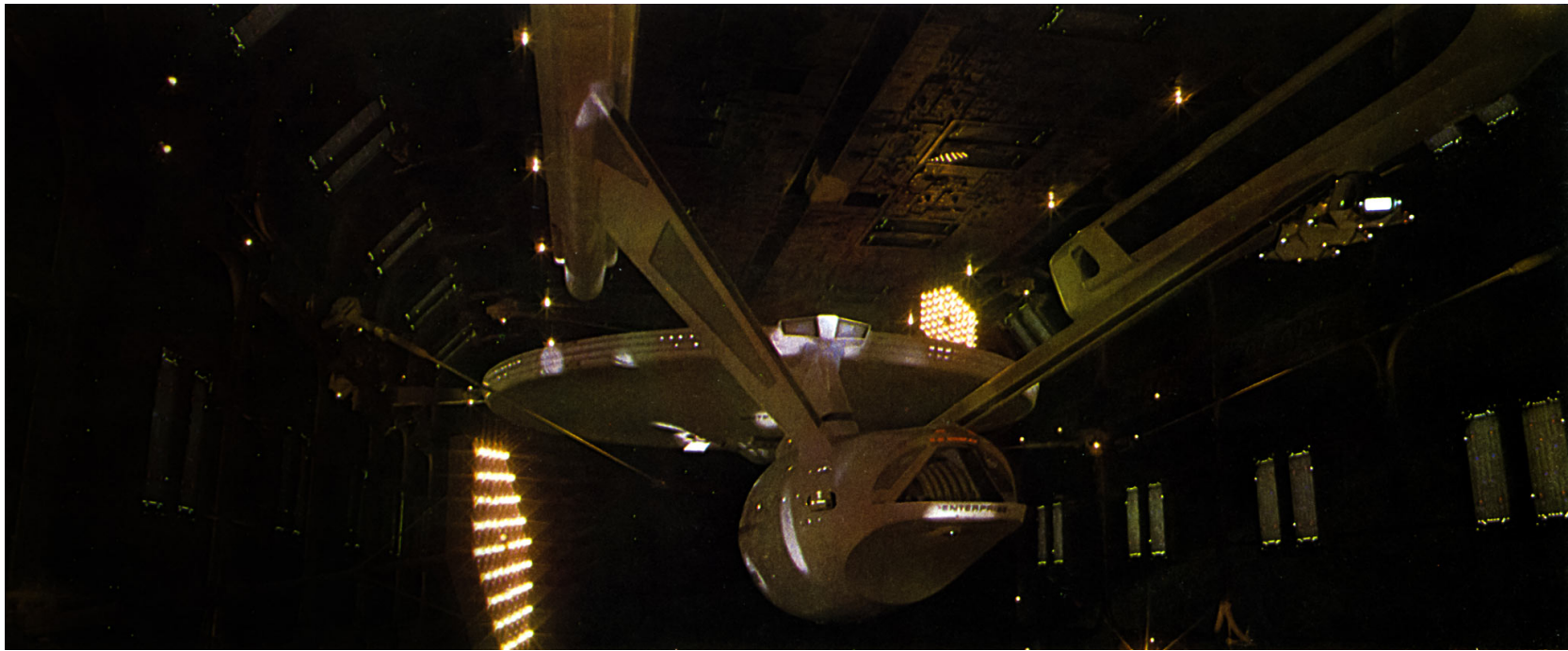
So it was my recommendation to scrap the whole sequence and start over. With all the money and effort they'd already expended, it took a bit of doing to convince everyone that it should be abandoned outright; but once everybody agreed that we should take another shot at it, I sat down and wrote a new spacewalk sequence based on some ideas I wanted to try which I felt we could do in the time we had. Basically, it was my intent to try and find a way to put some of the magic back in and turn it into a dynamic, exciting sequence that would blitz by in two or three minutes and be over with so the story could carry on. I decided not to involve Kirk at all, and just redesign it as a personal thing for Spock — a high-speed psychedelic trip through the stored images and memories of everything V'ger had encountered during its journey.

My ultimate proposal was for a whole series of straight point-of-view shots alternated with 180-degree reverse angles of the actors, utilizing faceplate reflections to tie it all together. By doing that, we could get a lot of shots done in short order without involving the cast very much at all. Also by taking what Spock was looking at and printing it behind him in reverse, we could get double mileage out of the footage. So I structured out the whole sequence along those lines and wrote the dialog and then brought Tom Cranham in to help work up a rough storyboard for it. Once it was approved, we took it from there.

In what other areas were you able to make significant contributions?

I was principally involved in designing the exterior V'ger cloud concept, and the progression of that idea came from my feeling that the cloud ought to have a particular shape to it — something that would give it screen direction and a sense of scale. In other words, it couldn't be just a blob of cotton; it had to have some shape that you could get camera angles on. Specifically what I wanted was something that suggested interconnected or intertwined shells of energy — a complex series of quasi-translucent shapes, all concentric around a central point. What I came up with first, just as an experiment, was to rotate a vertical shaft with a bunch of bent pieces of coat hanger wire on it — all painted white. Then as it rotated, we illuminated it with a strobe light that went off every quarter of a second or so, and shot Polaroid time exposures — maybe a hundred or two hundred flashes per exposure — to get a controlled blur which gave the whole thing kind of a volumetric shape. Then we'd bend the wires a bit and shoot another test.

Of course, it was never my intent to use bent wires for the final effect — what I really wanted was airbrushed artwork — and since the basic technique looked promising, I decided to try another little experiment just to see if we could indeed substitute the bent wires with a piece of artwork and then





move the camera relative to *it*, rather than the other way around. Since our standard artwork size was about 40x80 inches and had to be lit very carefully with polarized light, it would be much easier to move the camera relative to it than to try and move the artwork. So we mounted a Polaroid camera on a rotating arm and then moved the camera toward the artwork in an arc using the same strobe flash technique to build a shape. The artwork wasn't even airbrushed — it was just white grease pencil on a piece of black paper — but it proved our theory that we could follow focus on the artwork and maintain correct perspective.

Once we did that, I had some of the best bent-wire Polaroids blown up to 16x20 prints, and used one of them as a guide for an airbrush illustration of what I thought the cloud *could* look like if it were actually done with the right photographic techniques. Then we photographed it on the animation stand and showed it in dailies at different exposures to see how it looked; and it really looked nice. We liked it and Bob Wise liked it, so I went ahead and commissioned the construction of a special rig to do the actual photography.

Basically, it was a camera support that swung around a central pivot point on a curved track which was built very precisely and covered about 120 degrees of arc. It had a long boom arm with holes milled in it so you could mount a standard camera head at any radial distance out from the center; and it had a pulse motor drive so it could drive in and out and be run by computer. It also had an ingenious follow-focus device consisting of a stretched cable that ran from below the artwork to the camera on an automatic take-up device, with an electronic sensor which fed a constant exact reading to the automatic focusing unit.

We mounted a standard pan-and-tilt head that could be computer controlled, and a motion picture camera on that; and built this large 40x80-inch art frame that could be used with either back-lit or front-lit art. Then we airbrushed some cloud shapes — along the lines of our wire tests — and started taking more Polaroid shots to determine the right camera angles. After that, we started shooting tests on motion picture film, using multiplane exposure techniques to build up maybe forty or fifty passes on the same piece of film. The reason we wanted to shoot it on motion picture film was so we could incorporate some physical movement into our cloud shots; but it became very cumbersome, and we found that the motion tended to destroy the scale. So I decided that the best thing to do would be to shoot it as still artwork, and if there was any motion at all, to introduce that very subtly on the animation stand when it was composited. With that in mind, we went back and built another special rig to mount a 4x5 Polaroid camera onto one of our motion picture follow-focus bases, and then put an electronic shutter on the front of the camera so it would automatically shoot maybe two hundred exposures as it sequenced around the arc. It worked great, and we ended up photographing quite a wide range of different pieces of art-

work on Polaroid PN film — which is a positive-negative film. We could verify we were getting what we wanted with the positive, and then use the negative to make large 16x20 prints which we'd then retouch by hand. The final composites were made from a number of different positive and negative cloud elements, combined with lights and colored filters and airbrush artwork.

Earlier you mentioned using a multiplane technique. What specifically is multiplane?

Basically, multiplane is just the idea that at any point in time there may be a number of different exposures on a single piece of film, each occurring at a different distance from the camera. The first multiplane camera was built back in the early Thirties by Walt Disney, so it's certainly not a new concept. Our application of it is somewhat different though. The Disney multiplane system was basically a series of glass panes that could move on north-south and east-west axes, coupled with a camera that moved up or down in relation to those panes. Disney used it in a number of his cartoons, and even though he was dealing with flat painted artwork, the multiplane created differing relationships and an illusion of depth.

Now, if you were to have a whole series of glass panes — some close and some far away — and were to move the camera through these panes, the things that were on them would appear to be dimensionally suspended in space. Obviously, you can't do that with panes of glass, because there's no way to actually travel *through* them physically — but you can get the same effect by using multiple exposures. And that's the essence of our multiplane concept. If you treat each level as an individual separate exposure of some piece of artwork, you can organize it so that the first exposure can occur one foot away and move toward the camera at a certain rate; then the second can occur two feet away and move toward the camera at a certain rate; and so on and so forth until you have maybe twenty or thirty or even a hundred levels of simultaneous exposure on a single piece of film, all moving relative to one another.

Is this something you'd do on an animation stand?

Well, you could, but it would be very difficult in our case because of the complexity of the shots. For example, all the stars you see coming toward the camera during the warp drive sequences were done using multiplane technique, and so were a lot of the complex layered images in the V'ger cloud. We'd have had only limited success on an animation stand, because there simply isn't a lot of variance from the largest field to the smallest. Most of the multiplane stuff was done on a large DC servo drive unit called Compsy, which we developed ourselves and built in-house. The Compsy camera runs along a horizontal track toward an art stand designed to take artwork roughly 40x80 inches. And since it can move in from ten or twenty feet down the track, the camera can initially take in an area much larger than the artwork itself, and then move all the way down to about a three-inch field, carrying focus and depth of field the whole time. You gain a copy ratio of about fifty-to-one,

Precise repeatability of motion is the keystone of modern special effects technology. To this end, six computerized motion control systems were employed by Trumbull's crew. Each was designed to record, and then play back, a variety of coordinated camera and model moves — and be able to repeat these moves exactly, take after take. All the model shots required at least two passes — one for the basic shot, and a second for the matte. The Enterprise generally required a third for the outboard strobe lights which were turned on and off manually as the motion control system sequenced through the shot. Director of model photography Dave Stewart (center foreground) operates the joystick device which interfaces between the motion control computer and the individual motors effecting the desired moves. Cameraman David Hardberger follows the move through the camera viewfinder, while gaffer David Gold adjusts an array of small articulated mirrors used to cast pools of light onto the ship.

which is what gives you that great expanse of apparent space in front of the camera. Plus it's all done under motion control with an automatic acceleration factor programmed in so that when things are in the distance they're moving much more slowly than when they're up close to the camera — that helps create sort of an artificial perspective enhancement.

And you had twenty or more layers of this going on simultaneously?

Right. Each photographic element might be anywhere from twenty to fifty passes in depth, using various kinds of back-lit or airbrushed artwork. Each scene, in turn, might consist of four or five different photographic elements. So it was a pretty complicated process. Plus we had a lot of matte stages that made it even more so.

How did Apogee come to be involved in Star Trek?

As it turned out, *Altered States* ran into some heavy snags — the original director was replaced during preproduction and the project went into turnaround for awhile. Somehow, when it resurfaced, Apogee was no longer involved — which was perfect for us because it made Dykstra and his people available to work on *Star Trek*. We offered them a major subcontract, and they took it.

How much of the picture was theirs?

I'd say maybe thirty percent of the effects were done at Apogee. Early on, we sat down and decided what effects we were best able to do, and what effects they were best able to do — and kind of split the picture up that way. They did the opening sequence with the Klingon cruisers and the Epsilon 9 space station, plus the energy probe that gets inside the *Enterprise* bridge, and all the exterior V'ger shots. They also did the whiplash bolt and the photon torpedoes and a lot of viewscreen stuff.

What kind of a working relationship did you have with Apogee? Did you just turn sequences over to them and let them decide how they were going to do them?

For the most part, yes. We did have quite a lot of interaction, but I felt that they'd somehow managed to do *Star Wars* without any help from us, so it didn't seem appropriate for me to superimpose myself too strongly on their operation. For the most part, Apogee worked almost entirely under Bob Wise's direction.

You work exclusively in 65mm with black-and-white high-contrast mattes; Apogee uses the 35mm VistaVision format and bluescreen mattes. Did you run into compatibility problems?

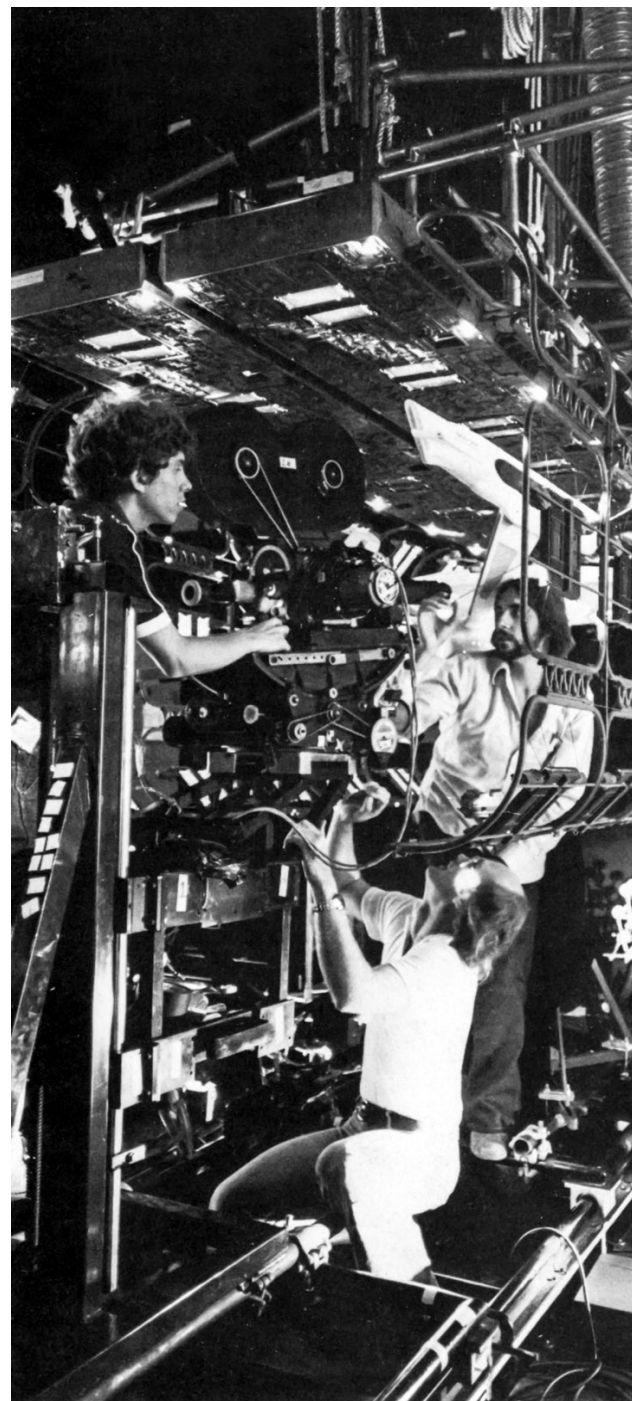
Not too much. Our differences were taken into account in deciding who should do what; and we tried to maximize the benefits of those differences wherever possible. For example, we shot all the *Enterprise* footage because the *Enterprise* model had a white, shiny surface and would have caused tremendous matting problems at Apogee. Spill light from the bluescreen would have reflected off the ship and created holes in the mattes. Even with our high-con operation we had quite a

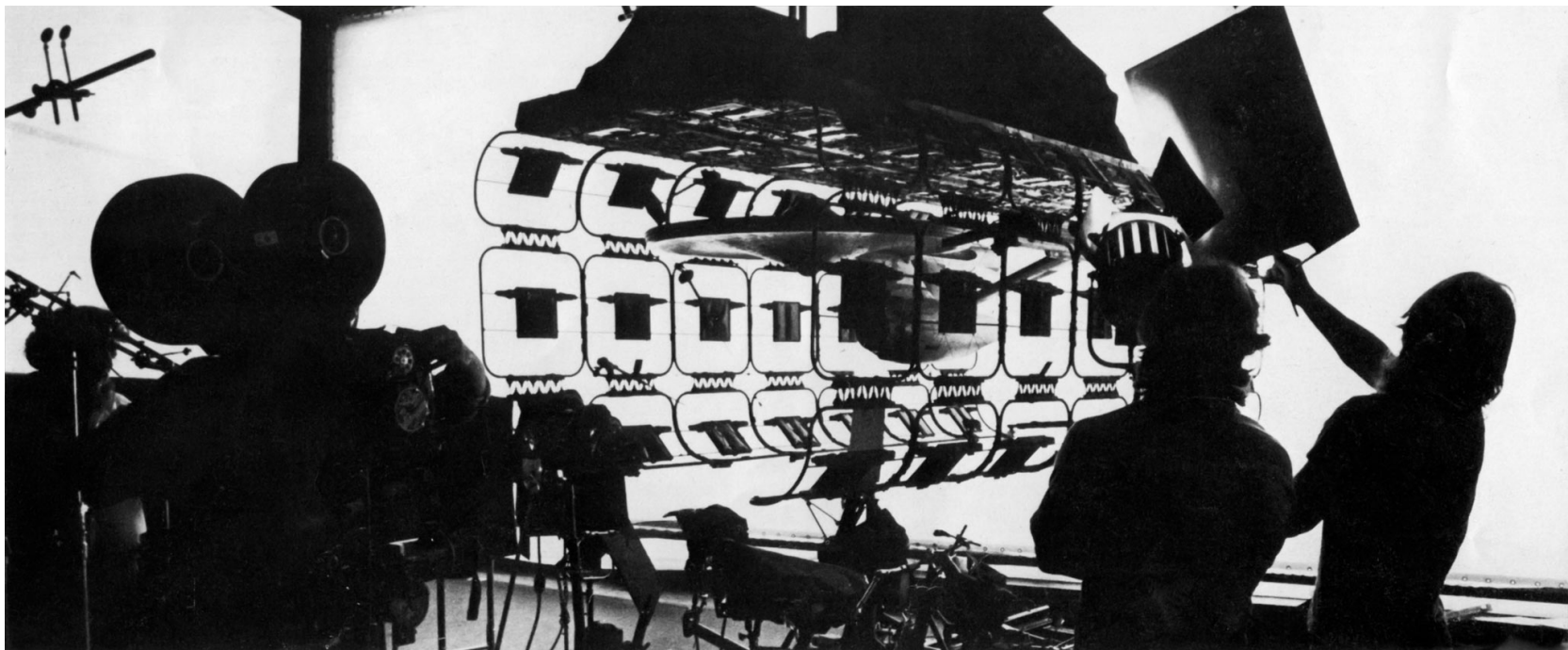
Working in extremely cramped quarters, cameraman Hoyt Yeatman, assisted by Russ McElhatton and Scott Farrar, prepares for a tight closeup. / Dave Stewart photographs an enlarged segment of the drydock which was matted over the

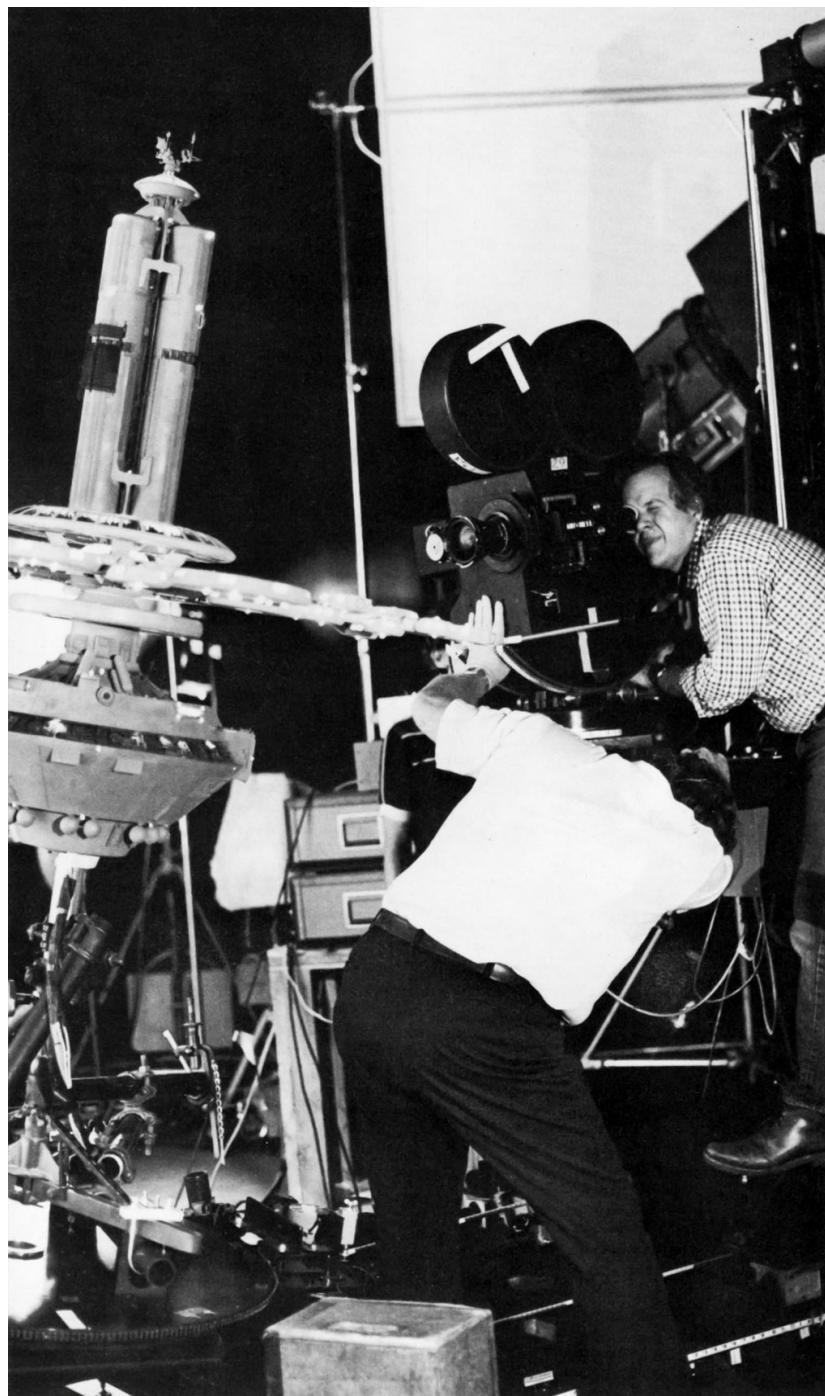
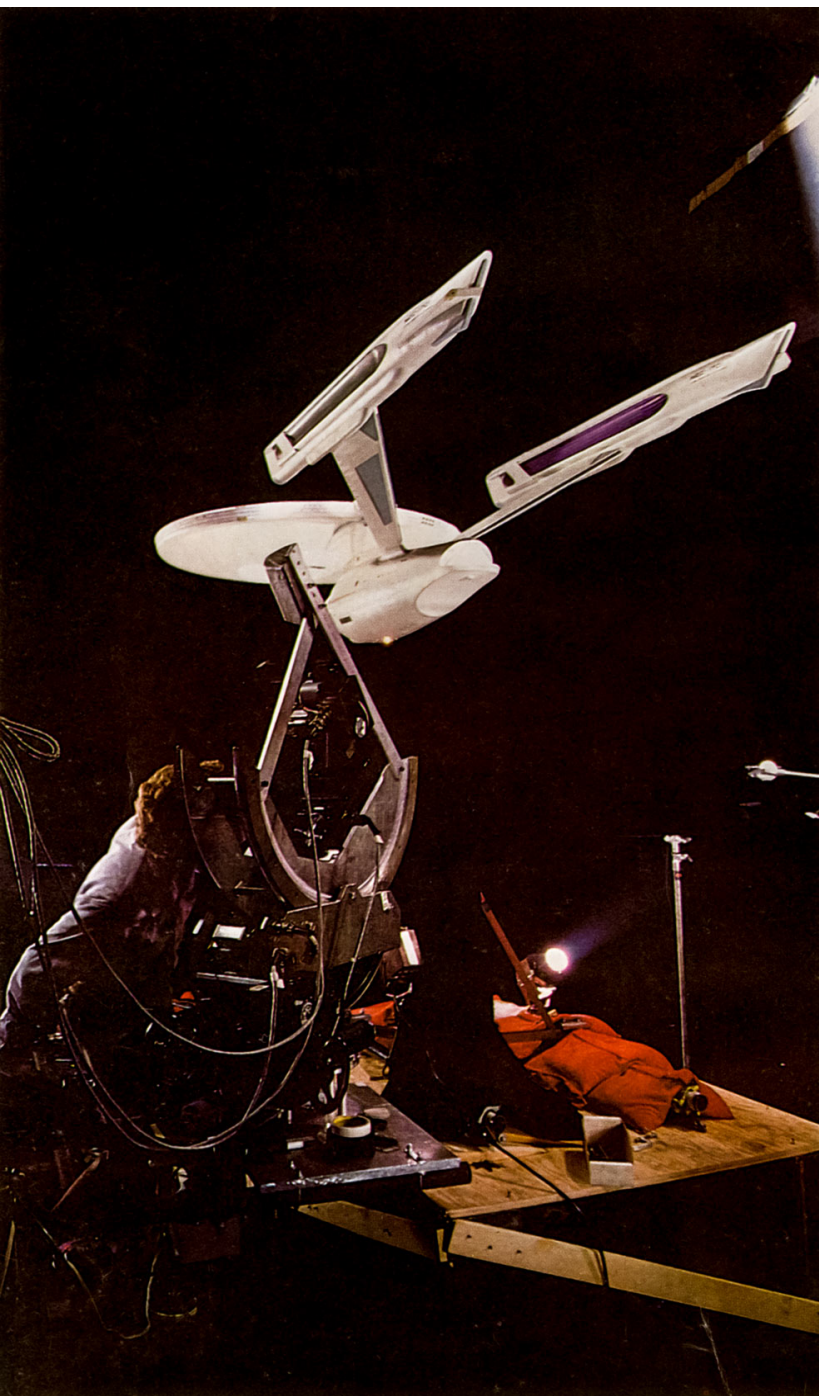
Enterprise in a number of shots where adequate depth of field could not be obtained using the full-size miniatures.

/ Dave Stewart and David Gold behind one of the 65mm cameras used throughout the effects photography. / Once a

basic front-lit shot was obtained, a back-lit duplicate was made to serve as the matte. Reflections from the Enterprise's shiny white surface complicated early attempts to obtain a perfect silhouette matte, but later experimentation led to the sandwiching of a normal back-lit matte with a negative front-lit matte to help fill in some of the spill areas.







problem pulling decent mattes off that model; with bluescreen it would have been nearly impossible.

Format-wise, we anticipated more of a problem than we actually had. Apogee built a 65mm-to-VistaVision optical printer, just for this picture, so we'd be able to convert elements from one format to another; but we ended up using it only in about four or five shots.

What are the advantages of shooting effects in a large format and then combining them with regular 35mm production photography?

Well, it's an unfortunate fact of life that every time you duplicate a piece of film, you degrade its quality — it gets a little bit softer, a little bit grainier, and a little more contrasty. So if you were to shoot an entire film in 35mm and then dupe certain parts of it for the effects sequences, then those parts would be of lesser quality than the ones that were not duped — and your eye could detect the difference. However, if you take every shot you're planning to dupe and shoot it in 65mm — which is actually more than twice the size of 35mm — you're doing your duping up in the large scale where you have more grain structure and more resolution to work with. Then, by the time you've degraded the image through duping, it's about equivalent to your 35mm production photography, and it cuts into the picture very nicely.

VistaVision also delivers an oversize image — but not as large as 65mm because the standard widescreen aspect ratio doesn't use the top and bottom of the VistaVision frame. The main advantage, though, is that you're still using 35mm film stock. So while I happen to prefer 65mm for its increased image area, it does have compensating disadvantages — the cameras are bulkier, the lenses are slower and have less depth of field, and there's only one lab in town that can process the stock.

There were a lot of credits for miniature work in the picture. Who was responsible for what?

Most of the initial models were built under a subcontract to Magicam, which is a Paramount subsidiary. They did the *Enterprise* and the drydock, the Klingon cruiser, the Vulcan space shuttle, the space office complex, and all the little travel pods and cargo transports and workbees that you see during the drydock sequence. Magicam built some really spectacular models, but one of the problems we had was that some of the principal ones just weren't big enough. And I don't mean that as a criticism of Magicam — they were working to the specifications they'd been given. But those specifications had been based on some really major misjudgments as to proper scale. The *Enterprise*, in particular, was one-fourth as big as it should have been. Even in *Silent Running*, which was a low-budget movie, our spacecraft was twenty-six feet long; in *2001*, the *Discovery* spacecraft was fifty-four feet long. But in *Star Trek*, the *Enterprise* is barely seven feet long; and it was just an enormous struggle to get not only a sufficient degree of detail, but also camera angles and depth of field and lighting that worked.

We had our own model shop in-house that did a lot of the detailing work — not that Magicam couldn't have done it, but the contract was written in such a way that those of us who were doing the actual photography could add the finishing touches as we saw fit. Our model shop did a number of other things, too. They built a scaled-up section of the space office complex for a docking sequence with the travel pod. They also did a miniature of the *Enterprise* officers' lounge, and were deeply involved in building the interior V'ger maw. Apogee had their own model shop where they built the V'ger exterior and Epsilon 9. These were both very large models, and beautifully detailed. Greg Jein was brought in at the last minute to construct the miniatures for the Spock spacewalk sequence, and he also did the V'ger interior. Greg was responsible for the mothership in *Close Encounters* and had just come off two years on *1941*, so I was lucky to have him available to me at just the right time.

In the travel pod sequence, how was the live-action footage put into the model?

The live-action footage was shot on a stage against black velvet and then rear-projected into the travel pod. The model, which was a couple feet long, had a hatch in the rear that was removable; so for the scenes where you see Kirk and Scotty inside, the rear hatch was taken out and the pod was mounted along with a rear projection unit on a rig which allowed both of them to travel down a track together. So what you're seeing is a rear-projected image through the window.

How did you compensate for the changing perspective as the model moved past the camera?

Surprisingly enough, the live-action footage was shot with a locked-off camera, so there's no change at all there. We did, however, manage to achieve a subtle perspective shift when we combined it with the model photography by building tiny running lights into the ceiling of the travel pod model and shooting each shot in three separate passes. We'd do one pass on the model, unlit except for the rear-projected images. Next we'd take the RP screen out, front-light the model, and shoot a second pass. Then, for the third pass, we'd turn on the running lights and shoot just those. So even though the perspective doesn't really change on the two guys, it appears to because of the overall movement and the fact that the running lights behind them are actually shifting perspective with the model. You just have to be careful not to make too dramatic a move.

Could you discuss the evolution of the V'ger design?

Well, none of us were real crazy about the one Robert Abel and his people had come up with. It was a black, cigar-shaped object that looked sort of like a weird fish with a lot of elaborate surface detail. Intrinsically, it just wasn't very interesting. We struggled with it for a long time, but it just didn't pay off; so we decided to redesign the whole concept. For one thing, we didn't like the fact that when you arrived at the point where the maw was located, it looked like the end of a blimp. Then the maw itself opened like a giant hinged clamshell — which wasn't a very interesting mechanism. Inside that there were going to be these sort of

The final shot in the film required the use of a special rig which enabled the camera to swing on a 180-degree arc down and under the Enterprise. Hoyt Yeatman is checking alignment. / Douglas Trumbull lines up a shot on the space office complex, mounted obliquely on a rotating model articulator. Although models and camera were capable of independent linear movement along precisely engineered tracks, most of the shots were designed with model moves only in order to avoid added lighting problems. Since full depth of field was critical, exposure times were long, ranging up to a half-minute or more per frame.

weird organic structures that would open to create a hole exactly the right cross section for the *Enterprise* to pass through. The idea behind it was that V'ger was an organic type of thing that could identify the *Enterprise* and ingest it in a very organized way — which I thought was kind of good, but they hadn't figured out how to actually do it. Then there was going to be an extensive tour of the interstices of V'ger, which at one point was to go on interminably — just a whole series of long shots of the *Enterprise* moving through these weird areas. One of the major things I did was to limit that tour so we wouldn't be spending long, long minutes of screen time on something that wasn't dramatically engrossing. Instead, we cut that entire sequence short and held off on the V'ger tour until the Spock spacewalk, which was fast and exciting and had a much more visceral, frightening quality to it.

Syd Meade did the major drawings for the final V'ger design — with a considerable amount of input from John Dykstra and me. The miniature itself was built in about eight or ten large sections over at Apogee. The whole intent was to produce an organic-looking machine and I think it was very successful. We even worked in some bizarre patterns so that as you pass over the thing, you keep seeing very large eyes or ears or a mouth or something — totally abstract, but because of the bilateral symmetry involved, the mind tends to transform them into weird ominous-looking faces.

At first, we weren't sure how we wanted to go on the V'ger maw. All we knew is that we wanted some kind of an orifice that would be quite unusual in its technique of opening. So we hired Ron Resch, a man I've known for several years and have been wanting to find some way of working with him. He's sort of a folding systems engineer — but that's an oversimplification of what he does. He's into all sorts of three-dimensional structural design and has developed things like space frame systems that are entirely articulated and foldable as well as various other kinds of modular systems. Anyway, what he came up with was a maw design that employed a series of six double-ended cones that were faceted and interlocked in such a way that when they were all rotated simultaneously, a hexagonal orifice irised open and closed rhythmically. It was very complicated, and almost impossible to explain — nobody could even draw it. We had to build a model of it to figure it out.

Apogee did the V'ger exterior, but your people did the interior. Why was that?

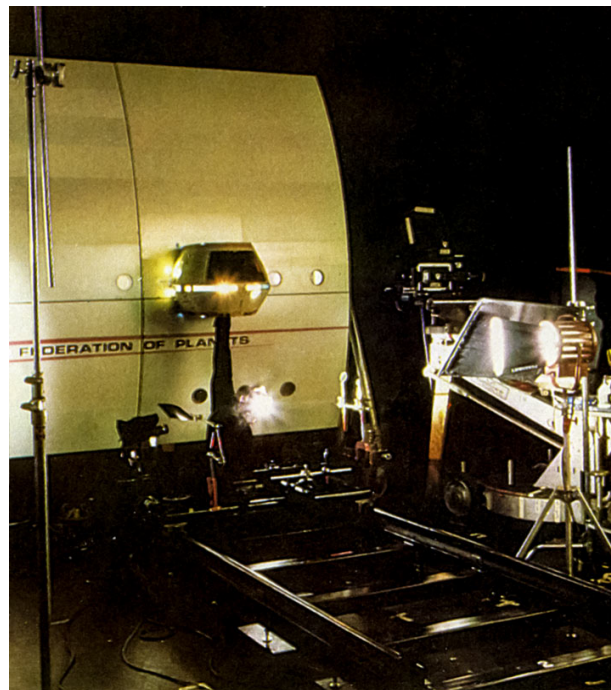
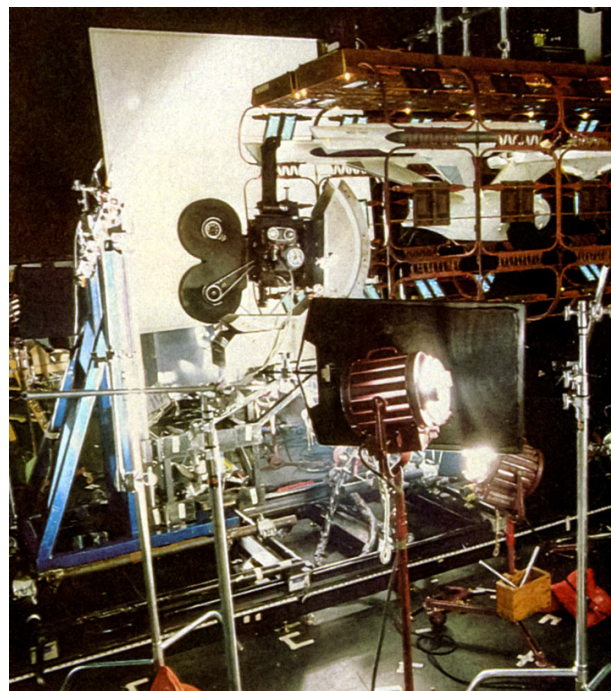
Well, it was really kind of an undefined zone, but since we were taking on the spacewalk — which was an interior V'ger effect — I felt that the best line to draw was that they would do the exterior and we would do the interior. That V'ger interior, however — whether it was going to be matte paintings or some kind of laser scanning effect or whatever — remained up in the air for an awful long time. Ultimately, since we didn't have enough time left to do much of anything else, we settled on a relatively straightforward approach, which was to build a huge miniature and shoot it in smoke — sort of like the mothership inside out.

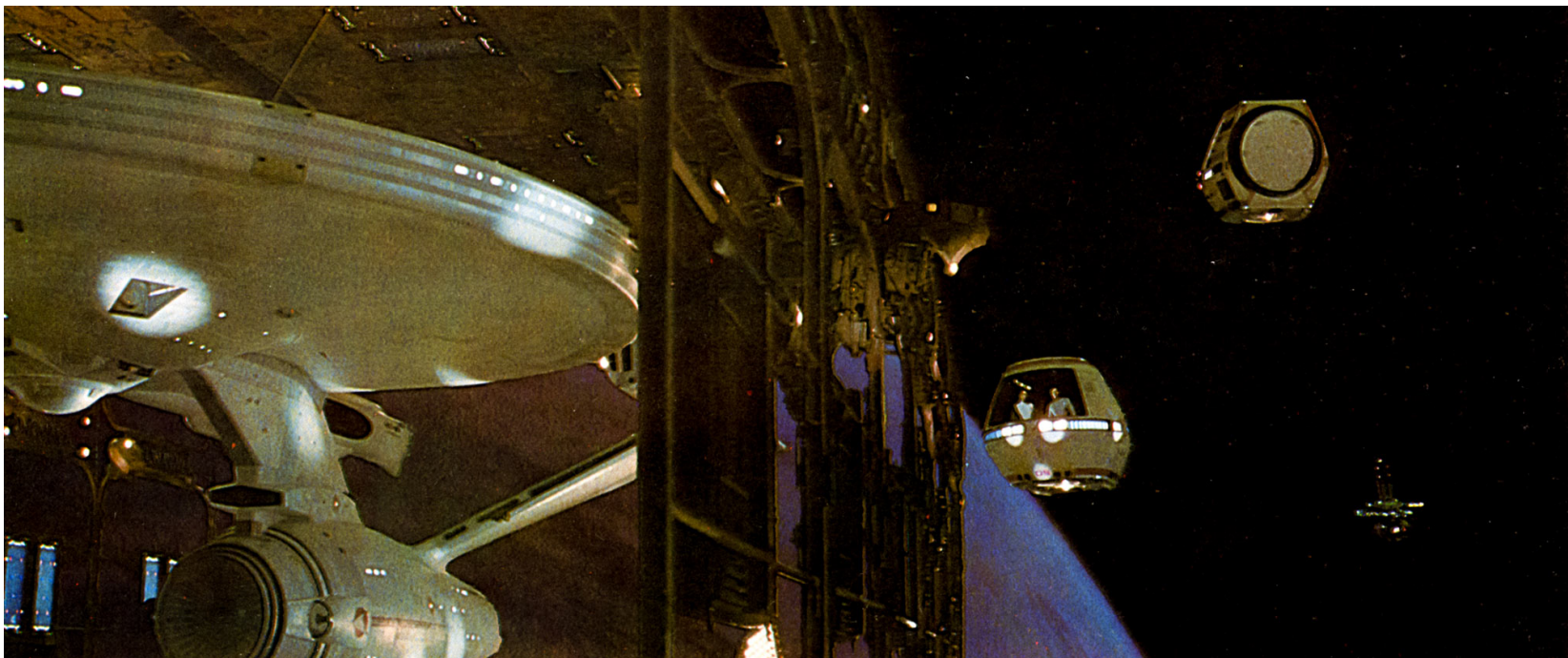
For extreme closeups in areas too small for the camera to fit, a snorkel lens was often used.

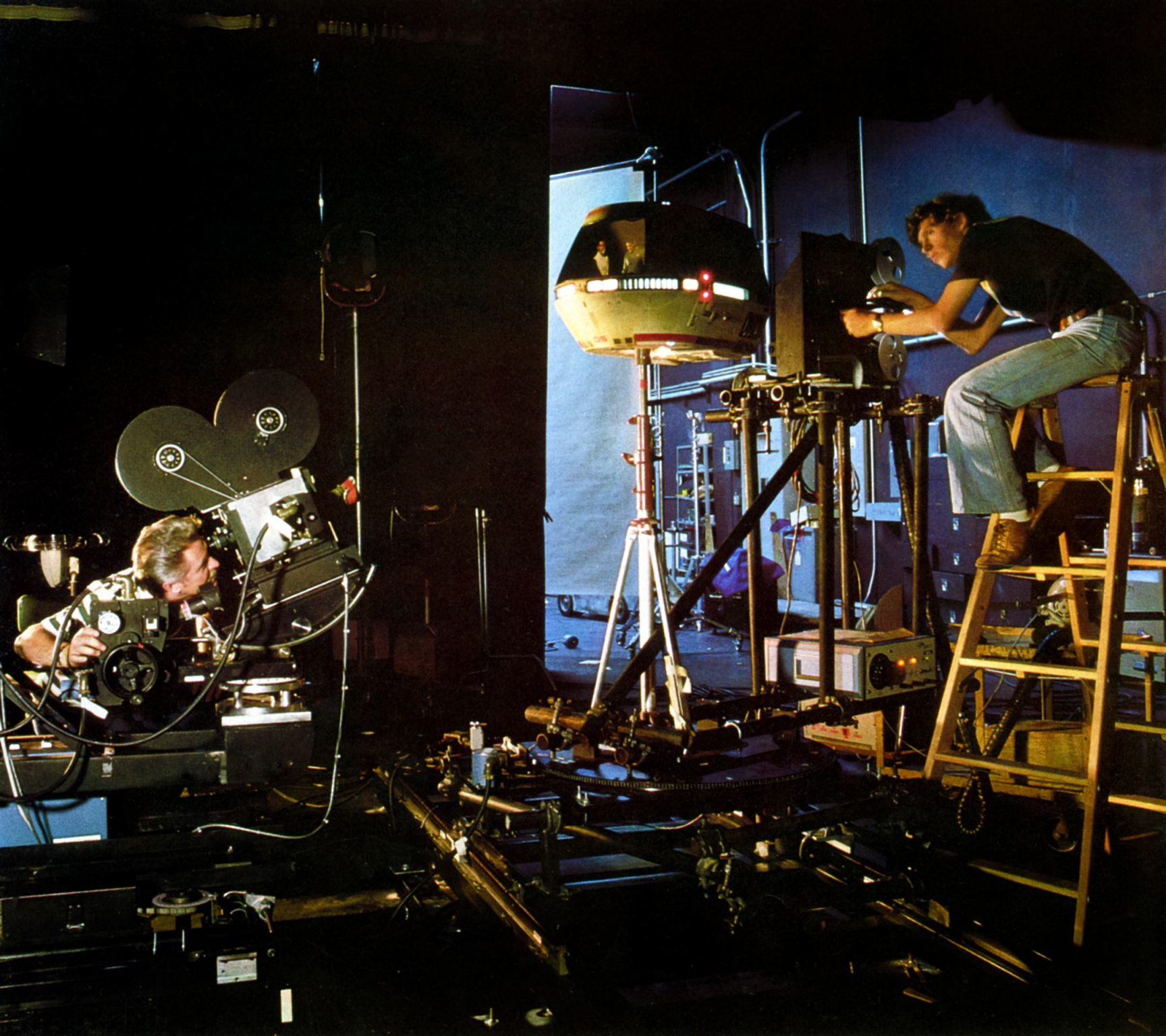
A periscope-type extension device, the snorkel lens produced a flopped and inverted film image which had then to be corrected in optical. / An enlarged section of the Enterprise was constructed and used for the travel pod docking sequence.

/ Many scenes required the combination of numerous film elements, all shot independently over a period of days or weeks and then composited by the optical department. In the upper frame, the space office complex, the cargo carrier and the workbee were photographed individually, each requiring two or more passes under motion control.

The earth painting and star backgrounds were shot as separate elements on the animation stand. Likewise in the lower frame, each individual element had to be meticulously planned, precisely photographed, and painstakingly composited to achieve a workable end result.







For a long time, though, that one interior lurked on the storyboards as just a cavernous chamber without any real design to it; and it wasn't until Syd Meade had completed all of his work on the V'ger exterior at Apogee that I was able to get him to come help design the interior. By then he'd already established a definite design style, which made the whole thing a lot easier. What I wanted was something with six-sided symmetry so the model parts that would have to be manufactured could be duplicatable. Syd did a series of illustrations incorporating some of my ideas, and once we settled on the design, I broke the project up into two parts. Greg Jein and his staff had the bulk of it; and then the model shop at Maxella had the orifice end, which had to be articulated with motor drives. When the two sections were finished, we designed a simple overlap system so that one frame fit right in front of the other.

Why did you decide to shoot that particular miniature in smoke?

We were never that sure we really wanted to, but finally it became apparent that shooting it in smoke was the only way to make it look credible at all — to give it the right scale and aerial perspective. The V'ger interior was constructed originally with an enormous number of miniature light bulbs built right into it; but somewhere along the line something went awry because the location of the bulbs was not ideal and they turned out to be a little bit too big — they just didn't look very believable. So at the last minute we came up with this mad idea of drilling a billion holes into the thing, threading in fiber optics, and then just brute-forcing the light by bundling the fiber optics together and cramming them in the front snoot of a mini-mole. And that worked just fine to give it the kind of massive scale we were looking for.

How did you go about implementing your new idea for the Spock spacewalk sequence?

By the time we actually got around to the spacewalk sequence we were really pushing the tail end of the production, and I was under an enormous amount of pressure. I had some vague ideas about what I wanted, but the storyboards we'd done up were still pretty abstract. So I telephoned Bob McCall and asked if he'd be interested in doing some designs for us. Lucky for me, he had just come off painting a huge mural at the Houston Space Center and was between jobs. So he came, and I just sort of told him generally what I had in mind, showed him as much film as we had available, and then turned him loose to paint anything he wanted. What he came up with, in just a very few weeks, were literally dozens of large-scale paintings with all sorts of amazing ideas in them. Based on those illustrations, I extracted various components I knew we could achieve, and then made rather simplified sketches and gave them to Greg Jein who launched in to a crash program to bash out all of the models we'd be needing.

Then I sketched out a storyboard that would mix all of these components together in some reasonable fashion — which kept changing, as a matter of fact. As the elements kept coming in, I'd keep shifting my ideas about what ought to be in front of what

and at what speeds everything should be traveling. And I did just about all of it in my head, because there wasn't any real way to plan it out. The shot lengths were assigned pretty arbitrarily, but determining how fast each element should be moving in space was kind of tricky. I started out just guessing at it, but finally I worked out a little formula so that if we were shooting with a 50mm lens on one camera and moving one foot in sixteen frames at a constant speed, then if we wanted to shoot another element on another camera we'd use the same variables. By doing that we were able to shoot at different times on different cameras — with different people who knew nothing about what the total shot was going to look like — and still have everything lock together perfectly in space.

For one segment, Greg had made a whole series of about fifty different planets and moons in different colors and sizes and textures that were actually just little plexiglass hemispheres with false backs on them. I wanted them all aligned symmetrically so the same planets and moons would be on the right side as on the left, but it was just impossible to get them lined up and lit properly; so we finally ended up just shooting three or four moons on one side and then optically flopping it to the other side, and doing the same thing with the mattes.

We tried anything and everything, including a few *incredible* cheats. In fact, we came up with a slogan around here — “crop it, flop it, or drop it” — it was the only way to get the movie done. I had sort of a multiplane star idea I wanted to have around Ilia at the end of the spacewalk sequence that never looked quite right. There were never enough planes and it never looked symmetrical enough. So we took one of the multiplane shots that had been done on the tub track — which was a terribly engineered track that we couldn't use a whole lot because it was so uneven — and you could see these multiplane streams of light all sort of wiggling around like worms because the track was so crooked. We printed that eight times on itself — four times normally and four times flopped left-to-right, each four feet out of sync with the others — with a heavy fog filter and blue gel, and made this really quite amazing-looking three-dimensional corridor of lights.

How did you do Ilia in that scene?

We had a very detailed plaster cast made of Persis Khambatta's head and shoulders, and attached that to a mannequin. Then we started fooling around with various ways of projecting textures and light effects onto her face. What I wanted was to have her appear as though she were stored in some kind of scintillating energy form, but we just never came up with anything that looked right to me. However, I knew that this energy ball thing on her neck, which was now floating in front of her, was going to be the real center of attention, so I decided to try a still photography session to see what we could come up with. We took the mannequin and started lighting it very carefully; and eventually we came up with a combination of blue lights and red lights and rim lights and kickers — all kinds of things — and got some really striking, beautiful photographs. We blew those up to

For the scenes showing Kirk and Scott inside the travel pod, William Shatner and James Doohan were photographed against black velvet and that footage was then projected through the rear hatch of the pod onto a small rear-projection screen. Although the projected footage was shot with a locked-off camera, subtle perspective changes were introduced by installing overhead running lights inside the model which shifted behind the figures in proper perspective as the travel pod moved relative to the camera. Separate passes were used to record the front-lit travel pod, the rear-projected image, the interior running lights, and the back-lit matte. Effects cameraman Alan Harding lines up the shot as Hoyt Yeatman makes adjustments to the projection system.

Special effects producer Richard Yurich reviews spacewalk storyboards with Robert Wise. / The departure from earth orbit involved a progressive increase in the Enterprise back-lighting timed to correlate with the advancing sunrise. The sun itself was introduced later as a separate element on the animation stand. / Douglas Trumbull studies a Polaroid concept test for the exterior V'ger cloud. / The final cloud effect was achieved by mounting a still camera on a curved track and sequencing it over an arc toward panels of airbrushed artwork. As the move progressed, an electronic shutter opened and closed, recording up to two hundred shifting images on a single negative. The result was a volumetric cloud-like shape representing V'ger's energy field. Several different angles were prepared, and then rephotographed on the animation stand with filters, colored gels and required moves.

16x20 color prints, had them retouched, and then shot them again on the animation stand with moves — and it came out just fine. There wasn't any need to do a big number on her at all.

Anyway, after we got all the elements we needed, I started figuring out how to layer them together and composite them. Then, at the very last minute, we finally worked out how to put the reflections on Spock's faceplate by mounting an 8mm Nikon fish-eye lens on the 70mm front projection machine we built for *Close Encounters* and never used. Using that, we projected our spacewalk footage into a three-foot diameter plexiglass dome surfaced with RP material, and then rephotographed the distorted imagery and superimposed it over Spock's faceplate, which was always static in the frame.

Why was that?

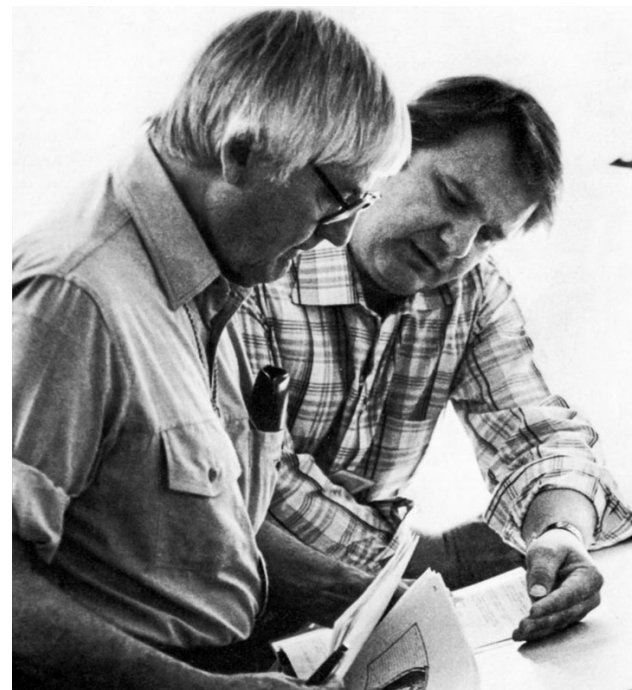
That was the one limitation of the new spacewalk sequence. The faceplate and background mattes for the reverse angles had to be still images. We brought Leonard Nimoy and Bill Shatner in for a couple days and shot their closeups in a spacesuit we'd rigged with a big steel brace that bolted into the helmet and backpack so we could shoot take after take at exactly the same position. So all the closeups in that sequence were limited to about five different camera angles. We had an A-angle and a B-angle and a C-angle and so on. Then we could manufacture any number of different shots by combining a given background with, say, a B-angle foreground, a B-angle faceplate, and a B-angle matte — whatever, as long as they were the same.

We were able to augment the closeups and subjective angle views with some full-figure shots that were done with a little miniature astronaut that was about two feet tall. Dykstra's group built him, including all the remote control articulation for the arms and legs; and we shot him under motion control.

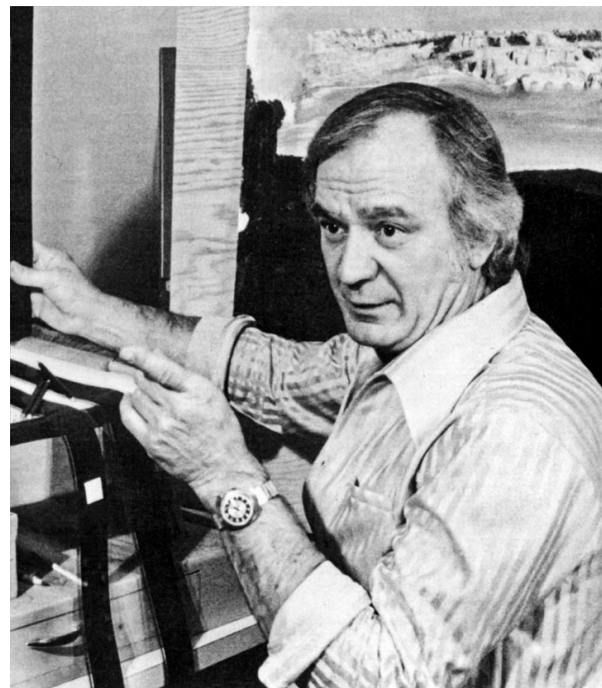
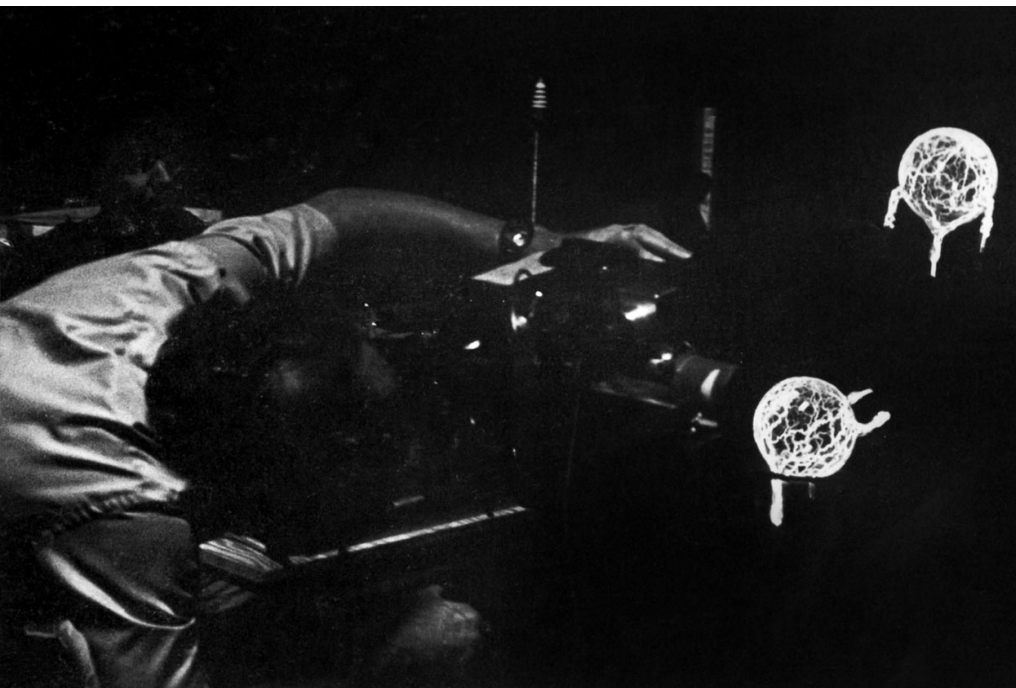
Did you end up using anything at all with live actors in flying rigs?

We did some shooting on one of the stages with a stuntman, but not on a wire rig — I've always hated wire rigs because they're so uncontrollable. Instead, I came up with the idea of developing a mechanism that would allow us to deal with a human being like we would with a model. We brought in a prosthetics specialist who designs and builds body-molded support systems for people who need artificial legs or back braces — anything like that — and he designed a rigid body harness specifically for this one stuntman. It covered most of his torso and had flanges built into it so we could screw a three-inch diameter steel post into the side, the front, or the back — and yet it wasn't particularly restricting or cumbersome. In fact, it was all built to go under one of the new spacesuits that we'd redesigned — which were also built by Dykstra's people.

With the harness rig, we were able to mount our stuntman on a rotating steel post connected to a crane, and then move him around and articulate him any way we wanted. And it really worked very well. We put him through his maneuvers in front of a blue process screen — so we'd be able to pull a matte off him — and used that footage for some of the space office complex shots







and also during the *Enterprise* drydock sequence.

Lightning effects seem to be prevalent with V'ger, and you spent a lot of time shooting actual high-voltage discharges of one sort or another. Did many of these make it into the film?

Not too many. High-voltage arcs were simply not controllable enough to give us any assurance of success; so most of the lightning effects you see in the film were done with a combination of animation techniques, starting with very fine pencil drawings on white paper which were then made into high-contrast film negatives and photographed on the animation stand at various exposures and with various colored gels. By using animation techniques, we were able to control exactly where we wanted the lightning to strike, when we wanted it to strike, how bright and what color it would be, and how long it would be there. So it really worked out a lot better.

The only *actual* lightning we used was in the spacewalk sequence where we generated a lot of effects with high-voltage electrical discharges inside glass containers filled with krypton and neon and various other gases. We have kind of a tunnel of lightning in there that was shot that way in high-speed 35mm and then multiple-exposed and combined optically. Plus the Ilia memory ball, which is the thing on her neck, was also done with that technique for the final shots in the sequence.

Could you talk a bit about the matte paintings, particularly the two San Francisco shots?

When we first cut to earth, we wanted a big master establishing shot that would immediately indicate that this was San Francisco three hundred years from now. So naturally, we had to use the Golden Gate Bridge which is one of the most recognizable landmarks on the planet — but it's not the Golden Gate Bridge we're used to seeing. Instead, we redesigned it to where it's no longer even a roadway, but rather some sort of weird pneumatic conveyance system. We found an angle on a hill overlooking the Golden Gate Bridge and filmed a shot looking down on it from above. We flopped it left-to-right to sort of screw up your sense about where you really are, and then Matthew Yuricich painted in just about everything. The final shot has real water on the left side of the bridge, but painted water on the right side. The top of the bridge is all painted in, and we superimposed little vehicles flying along inside these pneumatic tubes. The air tram station and the city in the distance are all painted. In fact, the entire city is completely different. The buildings and wharves have been removed and the beach area has been turned back to its natural pristine state. About the only thing we left was the Transamerica Building and the Coit Tower for a little bit of recognizability. Then the air tram that flies by is a model shot done under motion control and composited in.

The next shot you see — inside the air tram station — is the most complicated composite optical matte shot in the movie. They built a big floor set on one of the stages at Paramount with phony columns and supports and whatnot and shot all the actors down in there from a preset angle. Then, since even that wasn't big enough, the cameras were moved over and the action was

staged again so we could fit that section into another part of the frame. There was also a big hanging foreground piece with some people in it for scale. The rest is all painted, except for the introduction of the air tram which was a model shot. The miniature air tram had to come in and settle down on sort of a trough-track mechanism, casting a moving shadow on the wall to make it tie in with the set. That shot turned out to be a nightmare for the optical department, and it took us weeks to perfect it.

Were your planets done as matte paintings or dome projections?

Both. The earth shots in the opening of the picture were done on the matte stand. For the end of the movie, though, we tried something different. Don Moore painted a big illustration — about three feet square — of water and land masses. It was very detailed, but abstract in the sense that it wasn't a map-like representation. But it looked natural. A large-format transparency was made from this illustration and then projected onto a big white dome simultaneously with another projection of some clouds. The clouds were made by spreading black paper out on the floor and dropping talcum powder on it, which produced these very natural-looking fleecy cloud shapes. We photographed that and made an enlargement which was then air-brushed to add a little more gradation and detail. Then that, too, was made into a transparency. So now we're projecting the land masses and water with one projector and the clouds with another. But there's a third element that's made by taking the slide of the clouds and making from it a very thin-density negative, so the clouds are now sort of medium to light gray in color. This was then sandwiched in with the transparency of the land and sea masses and aligned so that the gray clouds fell directly beneath the white ones — and it looked like shadows on the planet surface. By photographing the dome obliquely, the clouds really appear to be up and away from the surface. Also, by adjusting the transparencies and shifting the shadows, you can alter the planet's apparent position in relation to the sun.

Could you discuss the transcendence sequence at the end where Decker merges with V'ger?

Well, again, there wasn't going to be time to go into anything very fancy so I tried to come up with an answer that was going to be relatively straightforward in technique. There had been some incredibly elaborate storyboards done at Abel's for this beautiful transformation thing, which was along the lines of a cocoon changing into a butterfly — literally — huge sets of wings folding out and all these other diaphanous things.

Sounds like their 7-Up commercial.

It was, really. There were a lot of very nice ideas, but I could never get a handle on exactly how to do it, particularly in the amount of time we had left.

Bob Swarthe actually worked out most of the details for the transcendence sequence, which I thought were quite ingeniously conceived. The initial cuts of Decker and Ilia, when the effect begins to happen, were shot live-action on the stage with a couple of incredibly powerful xenon aircraft landing lights shining

Matthew Yuricich (lower right) executed numerous matte paintings, including an establishing shot for the earth sequence which represented San Francisco some three hundred years in the future. The waterfront and beach areas have been restored, and the Golden Gate Bridge has been converted from a roadway to a pneumatic conveyance system. A futuristic air tram station sits on a point overlooking the bay, and all but a few of the most distinguished buildings have given way to more modern edifices. Only the water on the left side of the bridge is real — everything else is painted. / Shooting into an angled mirror to effect an overhead view, Scott Farrar uses a high-speed 35mm camera to record electrical discharges. Although some discharge effects were used in the spacewalk sequence, most of the lightning in the film was done with animation.

on them from behind to create an intense rim-light effect. Then, when the effect starts sweeping up over Decker, we went to a very complex series of overlapping moire patterns to create this beautiful, scintillating envelope of pure light energy. It looks very three-dimensional, but the effect was actually done with flat artwork on the animation stand and then superimposed over the stage photography.

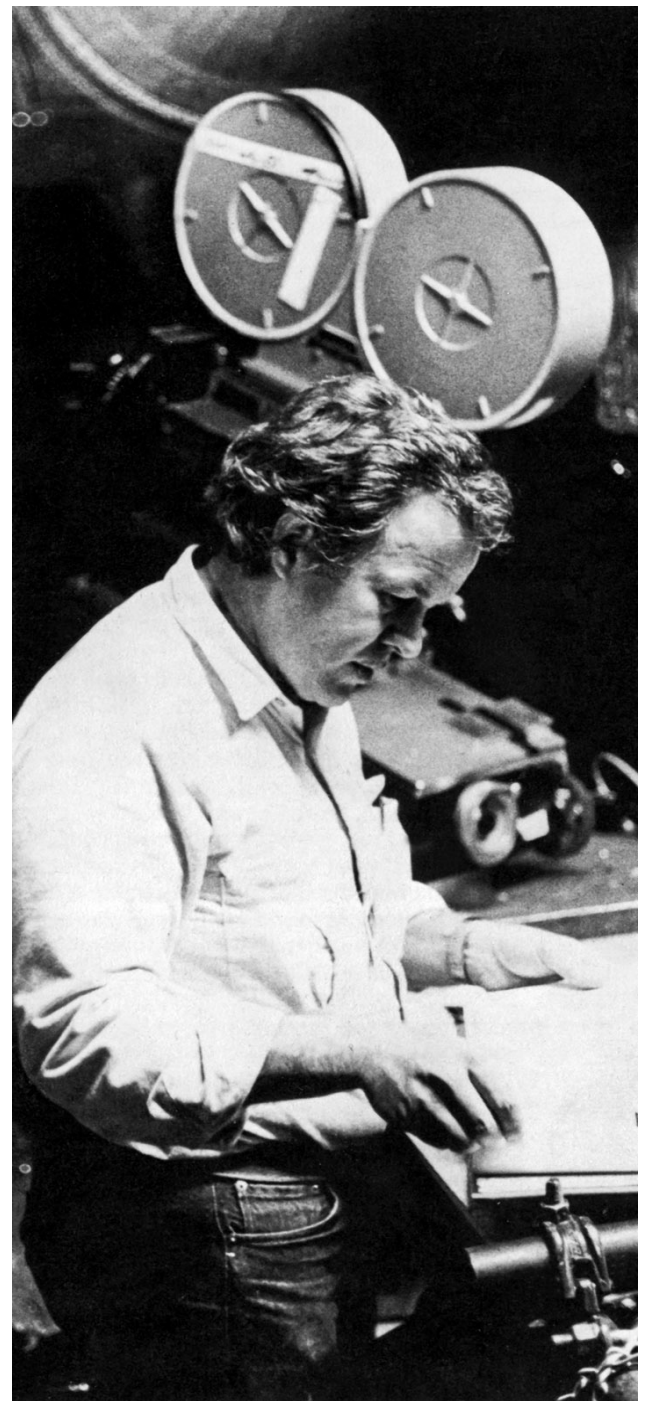
How about the explosion effect?

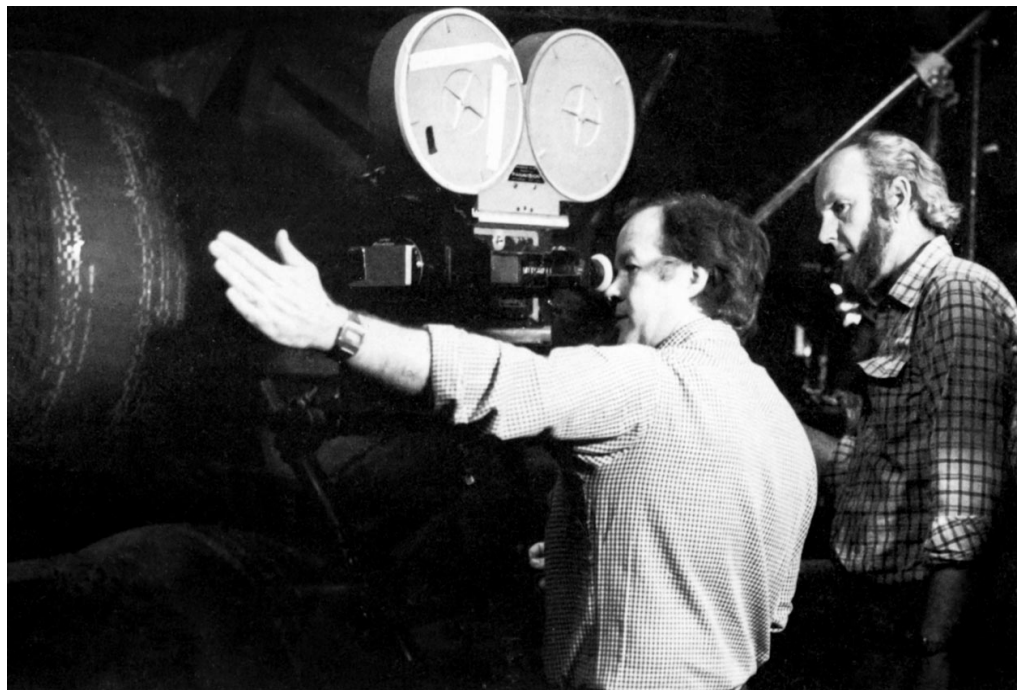
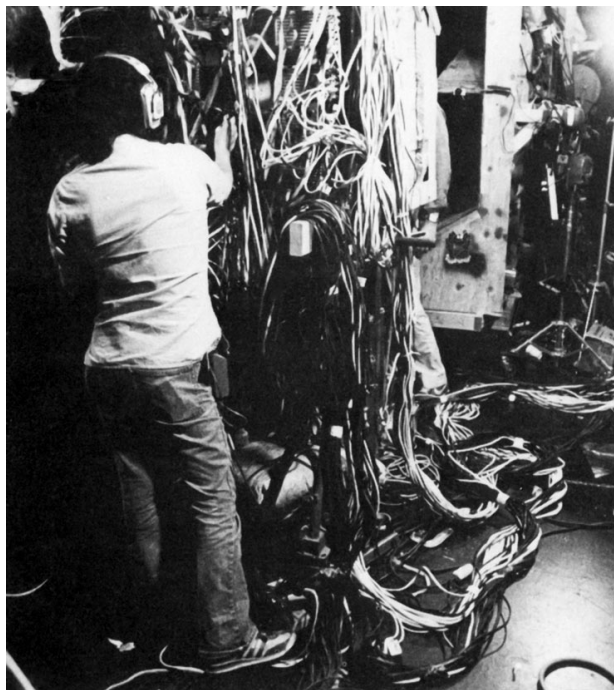
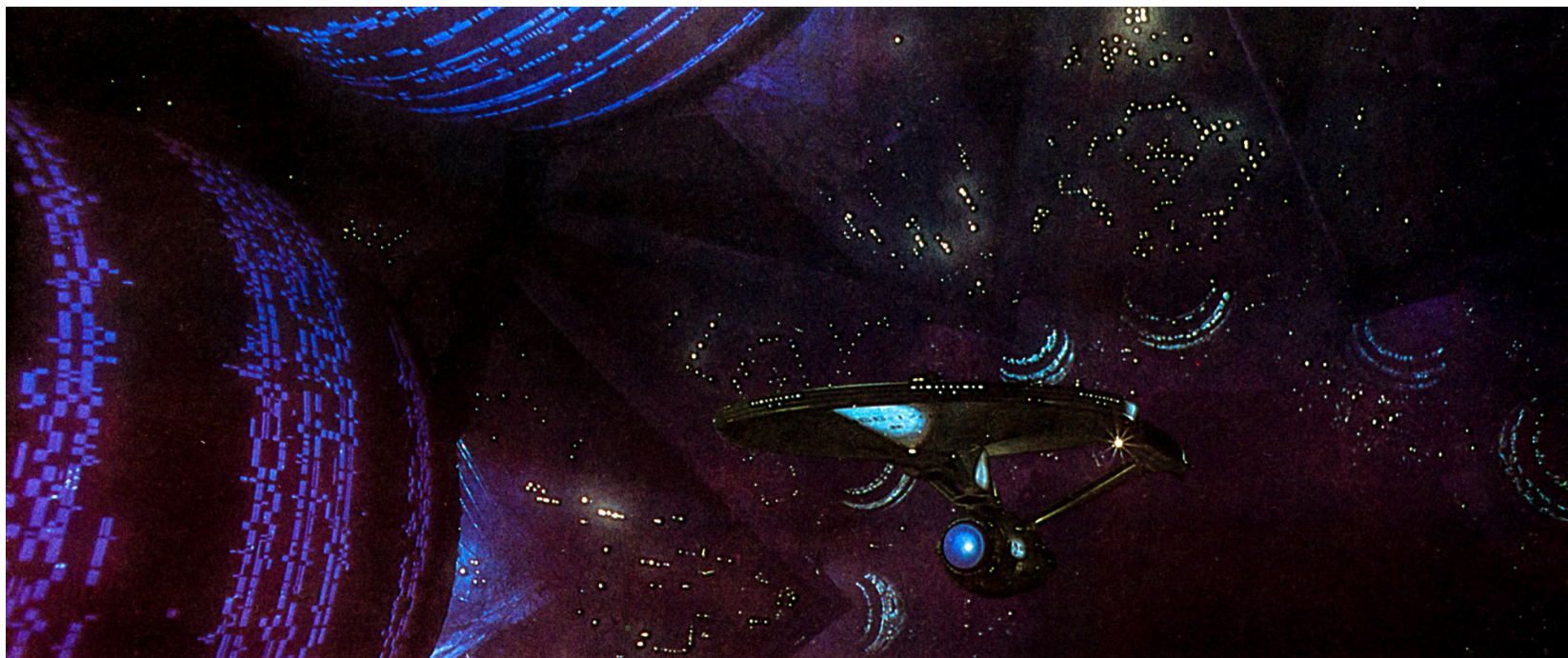
What I was trying for there was something that would be *like* an explosion, but yet not an explosion in the physical sense — sort of an explosion of light and energy that would represent V'ger's metamorphosis into another state. I worked out a very simple symmetry shot with the earth down below, centered, and then set the epicenter for this explosion — where everything would come from — about three fields north of center. No matter what camera an element was being shot on, it would always be shot to that center. In that way, we could just superimpose a whole bunch of different effects together and they'd all be originating from the same point. The first thing that was shot was the earth; and the next was the *Enterprise*, which was done on our big seventy-foot track. Then we started shooting elements with the idea of building a circular planar effect — not just an effect that went off in all directions at once, but an effect that went off pretty much horizontally so there would be a lot of very strong, flat perspective to it.

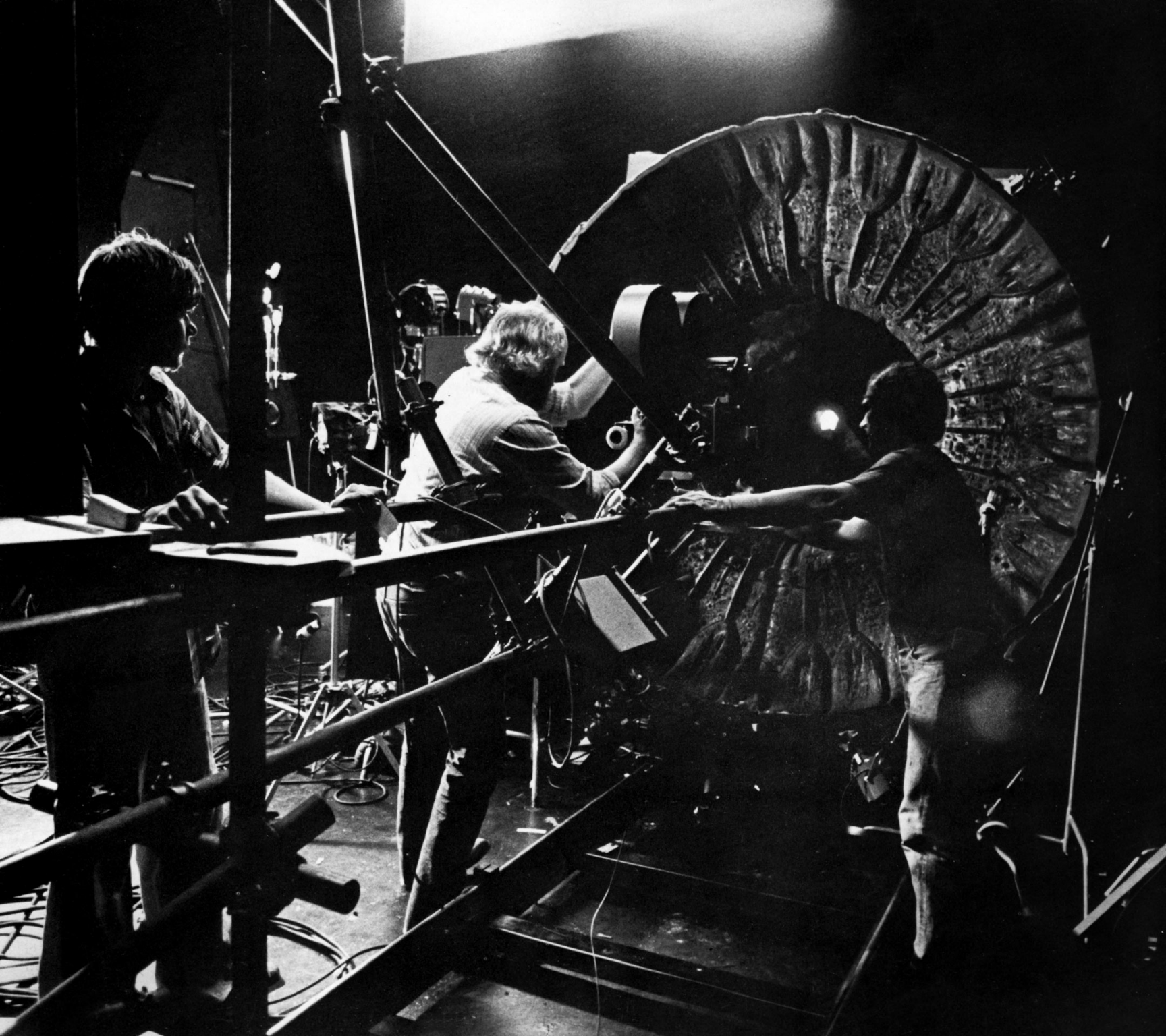
A number of elements involved photographing various kinds of patterns which were projected onto large white cards positioned obliquely to the camera. To do this, we mounted a tilting lens board on the camera so we could follow-focus on an oblique plane that extended from about one inch away out to about six feet. One element had about four overlapping concentric rings of multicolored galactic dust shooting out from the center and rotating slowly. These were really moire patterns created by projecting two counter-rotating pieces of textured artwork onto the card. By moving the camera and the card — which were mounted together on a carriage — away from the projector, the image got bigger and bigger and appeared to spread out. It also automatically compensated the exposure as well, since it was very hot and bright at the start and just tapered off naturally as the image got larger and farther away. We also made about a three-foot diameter double plexiglass ring on a light box that was shot from the same oblique angle with two double-rotating moire patterns on it to give a radial effect out from the center.

Then we had a blue shockwave effect which was done rather simply by using a curved piece of wire that rotated a full 360-degrees during each exposure. This created a streaked, doughnut-shaped image which we incremented outward and away from center, so the streaked ring of light that was being exposed got larger and larger on each successive frame. Using basically the same setup, we took a little grain-of-wheat light bulb and mounted it on a black pylon. By rotating that rig to about forty-eight separate positions around the circle for each frame, and then incrementing that outward as we'd done with

Douglas Trumbull pauses to review his notes during the V'ger interior shooting. / Greg Jein and a crew of thirty model-makers produced the principal interior structure — eight feet in diameter and twenty-two feet long — from plywood, fiberglass panels and plexiglass domes. More than twenty miles of fiber optic material was hand-threaded into minute holes, blanketing the miniature with thousands of tiny light sources to enhance its scale. The Enterprise was filmed separately on a different stage. / Behind the scenes was a nightmare of cables and electronic equipment. / With half of the V'ger interior isolated for easy access, Douglas Trumbull describes a desired setup to cameraman Jim Dickson.







the shockwave, we were able to get a whole ring of lights shooting out from the center.

I also wanted to incorporate some of the diffraction rings you can get with zoom lenses; so we took a 35mm zoom lens — a 25-to-250 Angenieux, with a 2X extender to give us a large enough image for the 70mm film — and we positioned it in front of the camera so that the center of the lens was positioned up to the epicenter of the explosion rather than the center of the frame. We made a little taped box around the joint between the lens and the camera, and then shot directly into the xenon light source of our front projection machine using different exposures, focus, and zoom rates to get the flare effects and colored striations we wanted.

Then, on the animation stand, we shot a back-lit light source, flickering and changing exposure — getting brighter and brighter — done with a couple of the special filter packs we worked out when we were doing the cloud sequence. That produced the preliminary central glow from which everything else emanated.

After we had all these elements, we just carefully superimposed them together — fading some up, fading others down, and syncing them all to the right cues. Then we faded in the *Enterprise* — matting it over the earth and over the stars, but not over the explosion itself; so the ship just sort of emerges from the white light of this explosion and it all looks kind of magical.

Earlier in the picture, how was the destruction of the Klingon cruisers filmed?

That was done by John Dykstra's crew over at Apogee and involved a number of different techniques, including laser scanning and Tesla coil lightning effects. Abel's people had planned to take these models and blow them up, like in *Star Wars*; and, in fact, they were building lightweight foam versions of the ships with pyrotechnics inside. But we decided that that wasn't what we wanted here, because the *idea* — which we don't know at this point in the movie — is that V'ger is zapping these things and turning them into some kind of stored information. So we decided, instead, to design an effect that sweeps from one end of the ship to the other — kind of a digitization effect — with the idea of turning a three-dimensional object into a two-dimensional light form that gets sucked back into the V'ger cloud and stored.

We even carried that concept over into our design of the Klingon interior, although the shot goes by so fast that you're hardly aware of what's happening. But since the Klingon sequence was left until after principal photography was completed, I was able to exert a lot of influence in the design of that set. My idea was to contrast the pristine cleanliness of the *Enterprise* with a dark, dingy vessel that kind of reflected the Klingons themselves. So I came up with a concept that looked something like a World War II submarine interior, and then added big, hydraulic shock mounts which were designed to give kind of a weird psychological impression — like giant spider legs or claws hanging over the set. Andy Probert did the finished design; and that, in turn, went to John Vallone, who did a fantastic job

building it.

What was particularly unique about the set was the fact that it was built in six levels which were mounted independently on rolling casters and registered into pins on the floor. Then, for the last shot in the sequence, we set up an elaborate six-level bluescreen optical so you could see the digitization effect working through the ship from back to front. First we started with the full set. Then we replaced the farthest level — which was the back wall of the set — with a blue process screen so we could add the actual disintegration footage later. We had to have sequenced light sources concealed behind each level, because as the disintegration occurs a brilliant lighting effect flashes onto the other levels of the set. And we just worked through all six levels like that — very quickly, so that by the time the Klingons in the foreground turn to react, the effect has engulfed them.

Didn't you plan, at one point, to use a lot of laser-generated effects?

I first thought of lasers as a means of generating the V'ger exterior, so it wouldn't end up just another standard plastic model kit job. Using the laser, I thought we could generate a really strange, diaphanous kind of nonreal surface — something that wouldn't be quite tactile. We so developed a technique for generating surface shapes and textures and colors by scanning a shape onto a flat rear-projection screen. Then by moving the camera — with the shutter open — in relation to the screen, we could accumulate a scanned image that had a very three-dimensional quality to it. It's a bit like slitscan, only using the laser beam itself in place of the slit — the laser scans the artwork in very thin slivers and then projects it onto the RP screen from which a camera can record an accumulated image on each frame of film. We did a lot of Polaroid tests with it and were indeed able to generate some very strange, surrealistic shapes. However, by the time we bought the laser — which took a long lead time to get — and got all the electronic components designed for doing the scanning, Dykstra was already up to speed on building huge V'ger exterior models; and they were looking so good we decided to transpose the whole laser idea into the wormhole sequence. It certainly didn't make any sense to sit here doing double duty.

For the wormhole we used sort of a hybrid audio synthesizer to generate circular wave forms — kind of like oscilloscope traces. The synthesizer inputs were controlled by potentiometers which were geared directly to pulse motors driven by the Gehring system; so the wave forms could be generated exactly, frame after frame, but incremented slightly to suggest movement. The laser beam was also controlled by the computer and interlocked with the camera which had a fairly wide lens on it and moved back and forth on a twenty-foot track relative to about a two-foot rear-projection screen. What we ended up generating was a tunnel that was really just an electronic wave form that you could travel through three-dimensionally. It came out to be turquoise in color — because that was the color of the laser beam — but I didn't want it to be turquoise, so we took that footage and reduced it to a black-and-white low-contrast film positive, which

Jim Dickson positions his camera for a shot of the interior V'ger maw. Designed to iris open and closed rhythmically under motion control, the orifice was constructed by the effects unit model shop and played a key role in the revised spacewalk sequence. As with the other V'ger interiors, once the shot was fully programmed, a dense cloud of vaporized fuel oil was pumped onto the stage to serve as a diffusing agent during actual photography.

Numerous techniques were employed to simulate weightlessness. One involved the construction of a molded body harness to which a rotating steel post could be affixed. Outfitted in the harness, a stuntman could be manipulated much like a model, without the restrictions of conventional wire rigs. / For the spacewalk sequence, an articulated miniature spaceman was filmed under motion control and then intercut with closeups of Spock and reverse angle subjective views. / For matting purposes, Leonard Nimoy did his portion of the sequence in a spacesuit and helmet which were bolted securely into place and positioned against a blue-screen. Colored flashbulbs to his left were fired during shooting to correlate with other effects that would be added later. / One of the first shots in the spacewalk sequence featured the miniature spaceman, composited over a representation of V'ger's home planet obtained by projecting artwork transparencies onto a domed surface. Animated lighting effects and the jettisoned thruster pack were separate elements.

we used as an interpositive with a special color pack to give it the sort of orange-sepia tint I was trying to get.

During this whole process, I came up with a negative version of the wormhole that looked like a bright vortex of lights with this dark veil of scanned images inside it. It was flashy and fast-moving, and had sort of a staccato look to it that I liked a lot because it just seemed scarier. But it didn't tie in very tightly with the interior streak stuff, and Bob Wise didn't like it. As a matter of fact, nobody else around here liked it either — but I liked it.

How was the interior footage achieved?

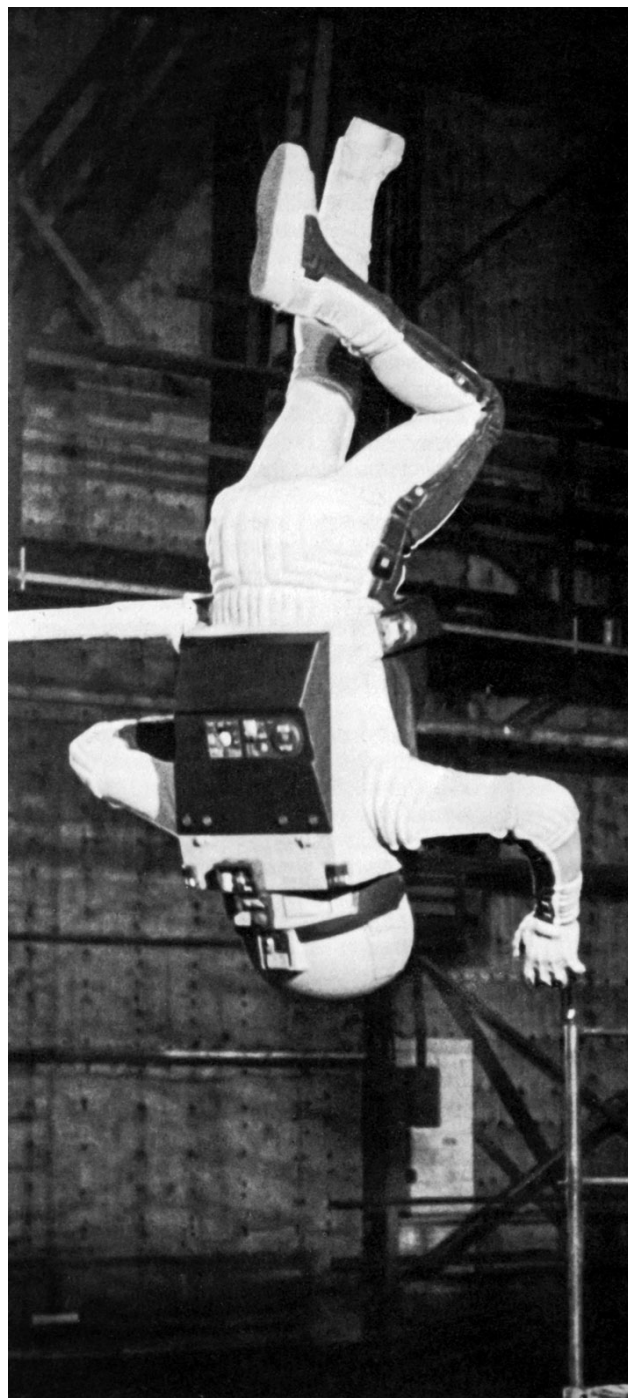
That was a whole series of about fifty cuts that were shot in 35mm on the stage, and it's actually the only segment in the film that was completed at Abel's. Bob Swarthe, who's a fantastic animator and who worked with me on *Close Encounters*, was in charge; and he had it well under control by the time Abel left the project. We opted to continue that sequence at Abel's — although not under his control — mainly because it was already in progress, but also because we were busy setting up a full-blown 65mm operation here and didn't want to have to get into 35mm as well.

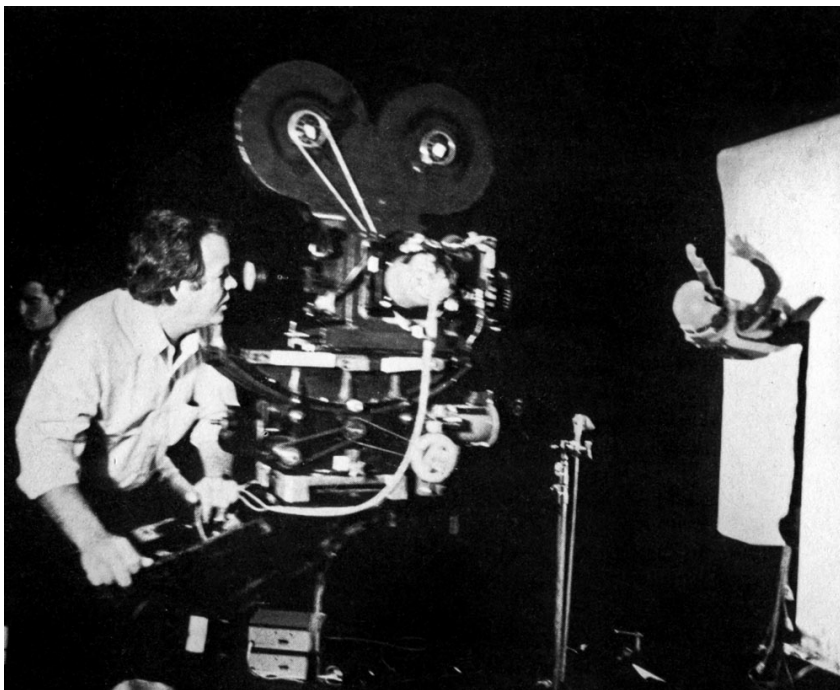
What kind of a rig was it shot on?

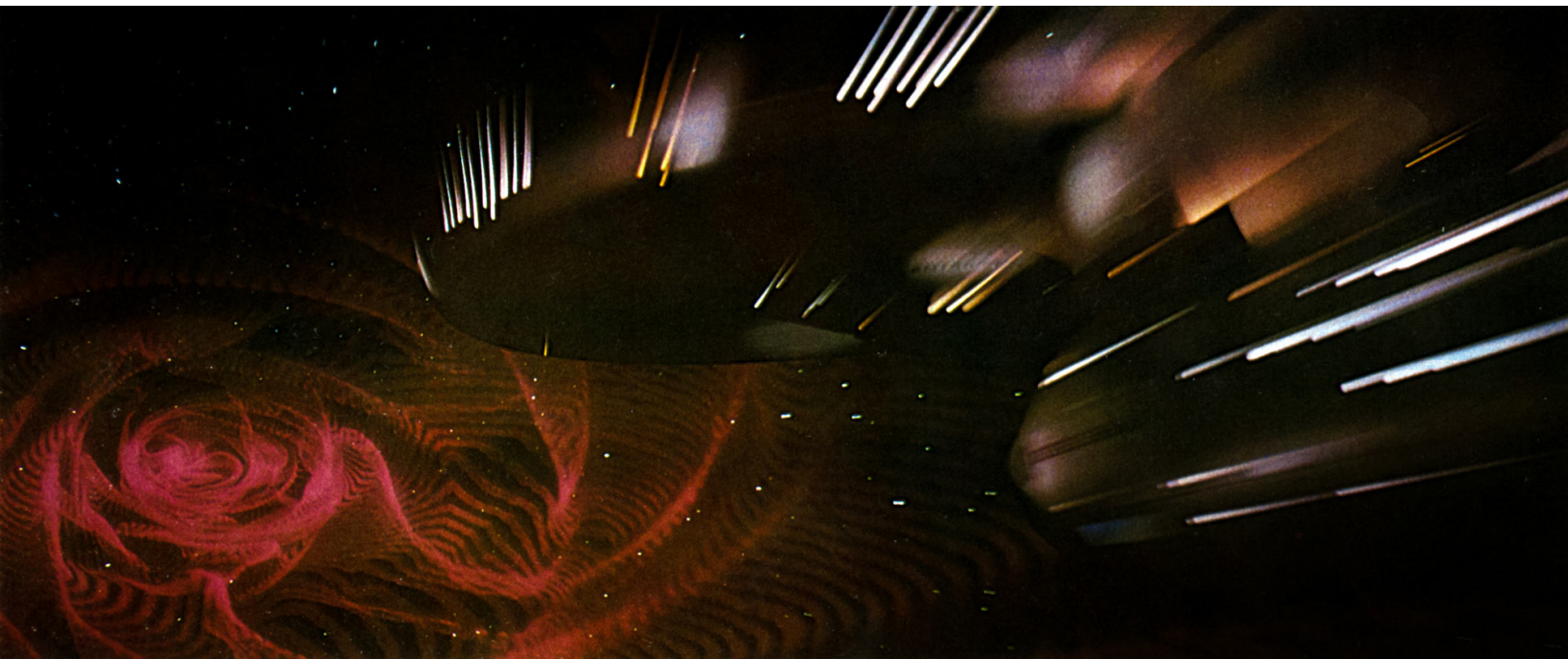
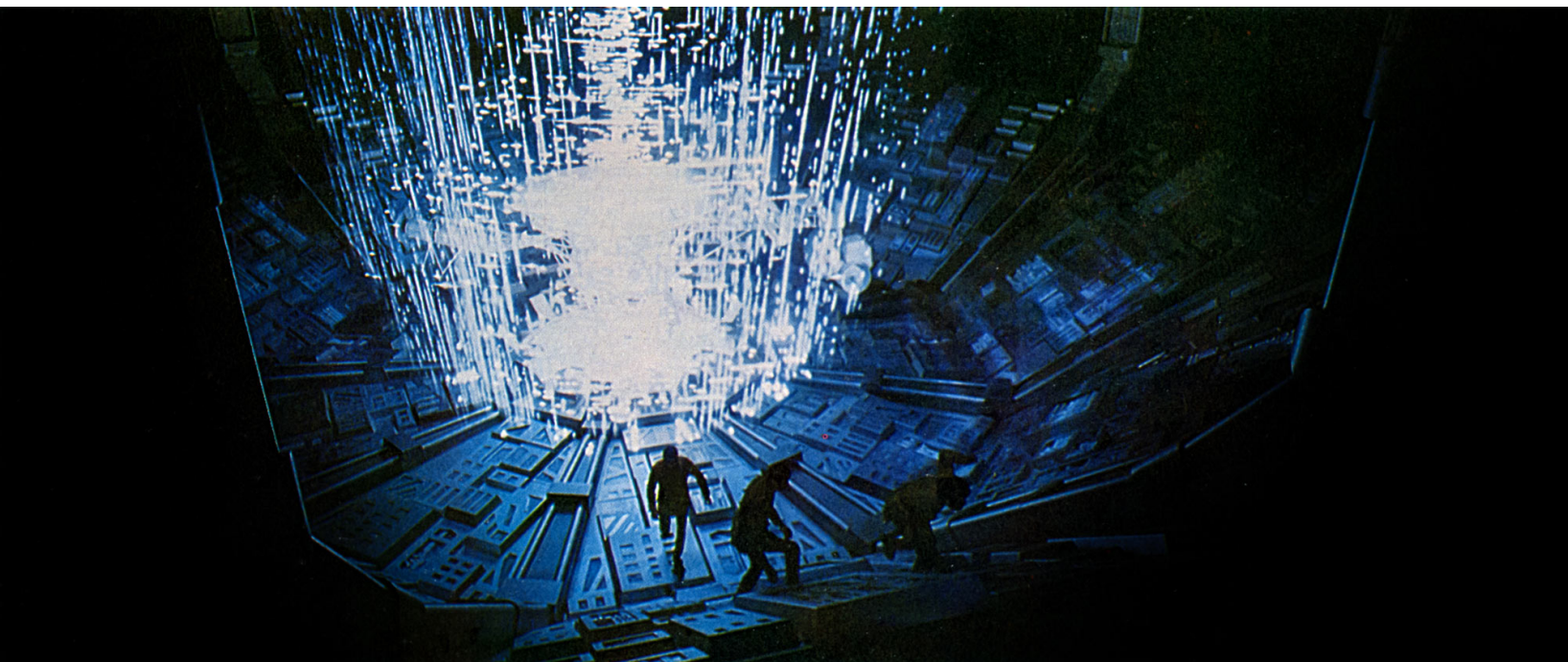
It was done on a horizontal camera stand with 35mm film projected from behind onto a little RP screen. They isolated the parts they wanted to have streaked — faces and lights, primarily — by making individual rotoscope masks that would reveal only those parts. Then, as each masked image was projected onto the RP screen, the camera would move relative to it with the shutter open and record it as a blur. The idea was they're caught up in this wormhole effect and you're seeing a distortion of time and space on the bridge — everything's starting to stretch out. Since the blurs keep changing and undulating during the shots, they had to use a computer to control all the motions. It was an extremely complicated process — each different streak in a given shot would require a separate pass — and it took them about seven months to complete the whole sequence. Then they went back and had all the streaks optically superimposed over the live-action footage they'd started from originally.

Did you use a similar method to streak the Enterprise during the exterior wormhole shots?

No. As a matter of fact, we did that on Compsy, although that wasn't our original intention. When we first got around to the wormhole sequence, I didn't think we were going to have time to try and streak the *Enterprise* at all. So we just shot the whole wormhole sequence with the *Enterprise* photographed normally, but with interactive lighting on it. It really wasn't until the end, when we wrapped on the *Enterprise* officially, that I realized we still had a couple of weeks left; so we took the *Enterprise* and put it on Compsy. We re-rigged the whole Compsy system with a different camera head arrangement so the camera could both pan and tilt, and yaw or pitch — there were really two heads on top of each other — and we created this curved









streaking effect on the *Enterprise* that looked very much like the interior wormhole footage. So not only is the *Enterprise* in the wormhole, but it is also tipping, turning, banking and streaking, all simultaneously.

Was this how the warp drive effects were done?

No, they'd already been completed by then. My original plan for the warp drive effect was to use a form of slitscan photography on a three-dimensional model — which had never been done before. In fact, I had a special rig built with an adapter lens designed to fit onto a normal 65mm camera and bring an aerial image of the model into a set of field lenses which condensed it down to an objective lens that focused into the camera. Between the field lenses was a motorized slit, operated under motion control, which could travel across this aerial image. So essentially what you'd have was the image of the model going through the slit and into the camera. If the camera were static and the model were static, the slit would just traverse the frame and you'd end up with a normal-looking picture. However, if you *changed* the relationship between the model and the camera while the slit was traversing the frame, you could — theoretically anyway — cause the *Enterprise*, or whatever else you were shooting, to stretch spatially in front of the camera in a way that you could never create with a mirror or some other optical technique.

What I was looking for was kind of a weird effect where the leading edge of the *Enterprise* dish would progress on out ahead of the ship while the nacelles were still normal in the foreground. Then, like a big rubber band that's stretched to its limit and snapped, the whole thing would get sucked out into infinity. The process was going to take an *enormous* amount of time because it would have to be shot with a lot of depth of field. And the usual problem of shooting at f/22 with the existing lights on the *Enterprise* was further compounded by the fact that the slit would be traversing the frame and making the whole exposure problem about a hundred times worse. In fact, I estimated it might take us anywhere from ten to thirty minutes to shoot each and every frame. But it was only going to be for a couple of shots, and I thought the effect would be worth having if we could get it.

However, in actuality, it turned out to be even more complicated than I had thought; and the guys on the stage had a horrendous time with it. As it turned out, it was almost impossible to coincide the slit, which was moving across the focal plane, with the movement of the model in space. Looking through the camera, all they could see would be this thin sliver of an image, and it was so abstracted that they couldn't really tell what part of the model they were looking at. Then we also had a problem with the slits, which were positioned at the focal plane of the aerial image system. They were high-contrast film negatives, and I now believe that just the slight surface of the film negative was causing a lot of distortion — because the images we were getting were very soft and fuzzy. I think the slit should actually have been some kind of a very precisely

Although three-dimensional in appearance, the transcendence effects were achieved entirely by the manipulation of two-dimensional artwork on the animation stand. As devised by animation supervisor Robert Swarthe, intricate slot-gags employed linear artwork in the form of high-contrast film negatives which were moved relative to one another and back-lit to produce a scintillating light effect. / Swarthe and his editor-assistant, Kathy Campbell, select flare effects from a series of test exposures. / The exterior wormhole was created by laser-scanning electronic wave forms onto a rear-projection screen and then moving the camera toward or away from the projected image during each frame of exposure. A computer incremented the moves precisely to achieve the illusion of actually traveling through the dimensional wave form. / The wormhole streaking of the Enterprise was shot on Compsy — a computerized servo drive unit designed primarily to generate the complex multi-plane imagery required for the V'ger cloud passage. Compsy cameraman Don Baker lines up a shot.

machined knife-blade edge, with no celluloid in between. Anyway, it wasn't yielding an exciting-enough effect, and the whole thing seemed to be laden with problems that we just didn't have time to solve. So after about two days of experimenting with it on the stage, I cancelled the project in midstream and went for a much simpler technique of just lighting the *Enterprise* and streaking it grossly through the frame.

With your motion control system?

Only in part. The Gehring system computer wasn't fully capable of calculating out those streaks. It could have been programmed to do that; but to try and get it to do a normal shot and then go into a streak was really asking more than its little discs could handle. So what Dave Stewart and his people did was program whatever repeatable camera moves were needed for the unstreaked portion of the shot. Then, after the motion control system had run things up to the point where the camera had stopped panning and tilting, they locked off the camera and began the streak by hand — moving it down the track using just a standard preset indexer and a capping shutter. It got pretty complicated sometimes, because the leading edge and the trailing edge of the streak were moving in space at different rates and that all had to be calculated out. But they'd just manually move it from point to point, opening and closing the shutter, and on each frame the *Enterprise* would streak a little bit farther.

The streaks seem to be multicolored. Was that just a function of lighting?

The lighting didn't change during the streak itself, but it was different from the rest of the shot. For one thing, the warp drive engines are supposed to be on, which lends a purple glow; plus we added a couple other pools of light with colored gels to make the streak more colorful.

The final scene in the movie is really spectacular.

As a matter of fact, that was one of the last shots we did on the big seventy-foot track, and it involved a really complicated camera move in addition to the streak. We knew all along that we needed something really big for the ending, but I'd kind of put off deciding exactly what it was going to be. See, one of the things I try to do on a project like this is to take it roughly in some kind of continuity; so as you grow and get better on each shot, the shots are also getting better in the progression of the movie — you don't want to have your best shots up front and your worst ones at the end. So in my mind, I sort of saved out the last two or three shots, just to kind of wait and see what we'd have at our disposal by the time we got to them.

Well, on toward the end of John Dykstra's shooting on the Klingons, he came up with the opening shot of the movie where the Klingon ships are heading toward the camera. The camera tilts straight down until it's looking directly on top of the Klingons, then does a 180-degree roll and tilts back up as it follows them off in the opposite direction toward the V'ger cloud. It was a nice shot; and I thought, thematically, it would

be interesting to sort of bracket the movie with a similar kind of shot for the tag. So we did everything we could to structure a shot with the *Enterprise* that was similar. We weren't able to get absolutely symmetrical because of the way the *Enterprise* was mounted and the way our camera was able to move on the rig; but I thought it was better to be off to the side somewhat, anyway.

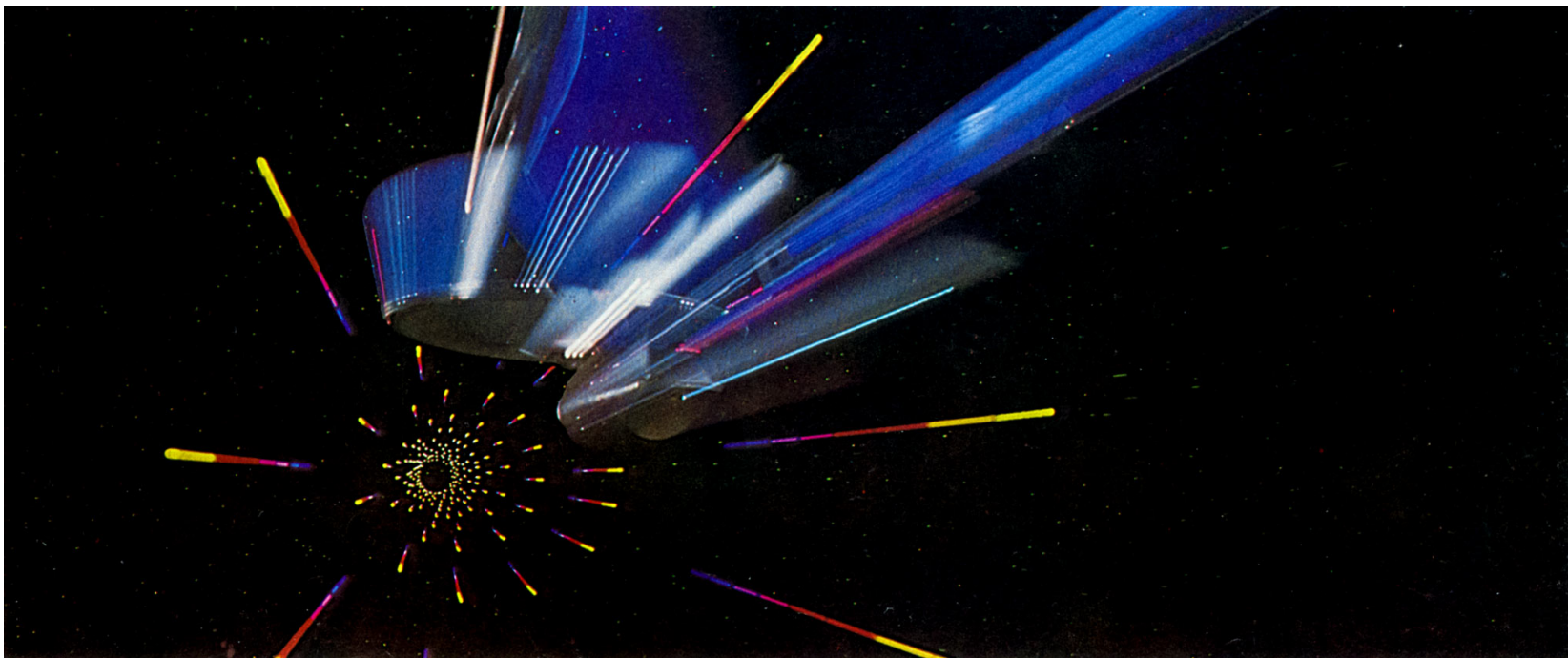
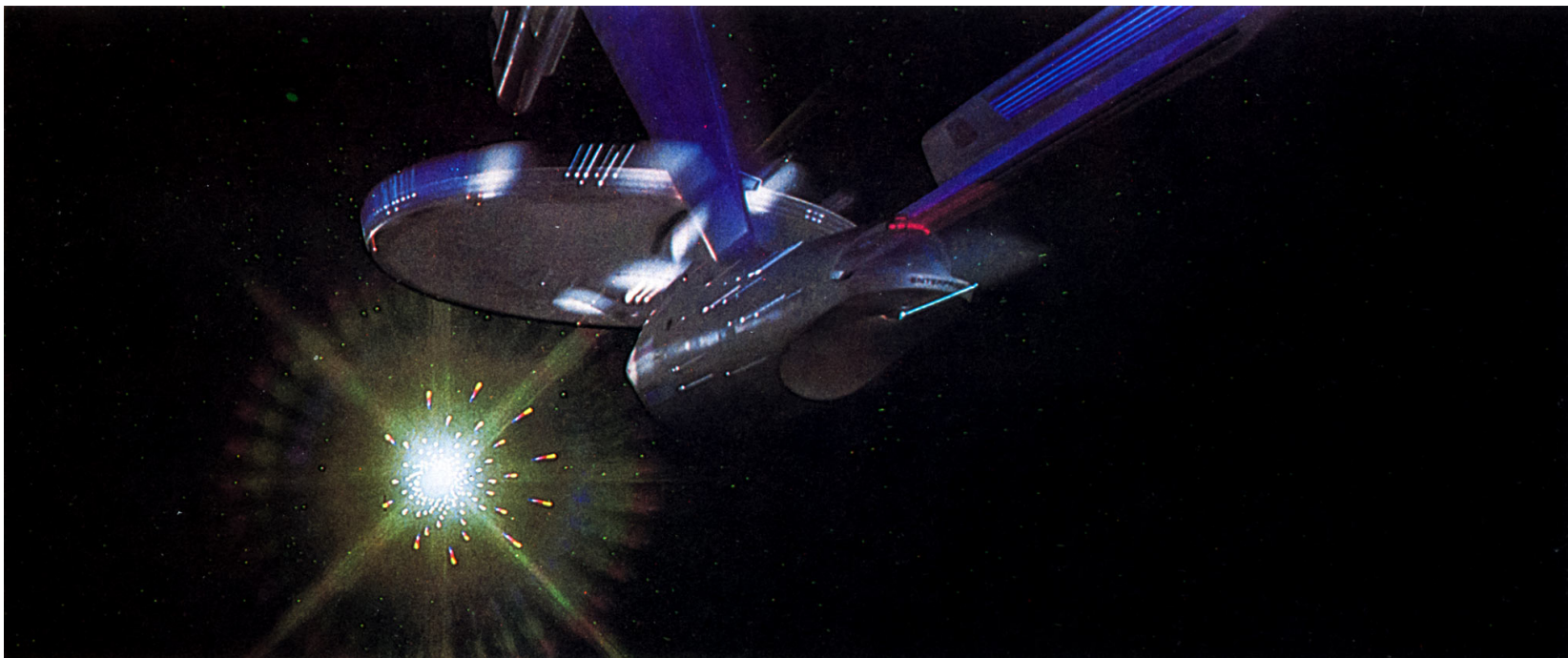
That last shot was particularly tricky because not only did we have to shoot the *Enterprise*, the streak and the matte, but we also had to match the movement of the ship with the background stars. That was done by removing the *Enterprise* model after it had been shot, placing Xs of white tape on the walls and ceiling of the stage, and shooting a final pass with the motion control. Then, by rotoscoping that final pass on the Oxberry, the animation crew could plot the proper movement for the stars by tracing the white Xs. It was a really complicated process, but they did such a beautiful job that you're not even aware that the stars and the ship were shot separately. Then of course, once we went into the streak, we popped off the background stars and brought up the Compsy multiplane stars.

How close did you come to achieving what you'd hoped to achieve when you took over this project?

Oh, I think we surpassed what I expected to achieve by quite a margin. I felt that coming in with the amount of time we had and the amount of work that needed to be done, the major thrust *had* to be toward just saving it. The big question was never whether or not it was going to be good; but rather whether or not we were even going to have a picture to release. Fortunately, we were able to take advantage of what I had learned, and what Dick Yuricich had learned, and what the whole crew had learned coming off *Close Encounters*; and despite the time crunch, we were still able to do a lot of experimentation and develop some new ideas that hadn't been tried before. But for the most part my primary objective was just to simplify everything I could — to get us out of a jam while simultaneously attacking all the holes in the movie. And in that respect, I'm pleased. In spite of the few things that are in there that I think fall short of what they *could* have been if we'd had the time, I'm proud of what we were able to achieve.

Operating now as a free agent, Douglas Trumbull is currently developing a film project for Paramount. The as yet untitled production, a contemporary adventure exploring the realm of perception and consciousness, will feature major effects sequences produced in Showscan — Trumbull's innovative film process which has remained unexploited since its development at Future General some three years ago. Employing high-speed photographic and projection techniques to boost the level of visual information being fed to the eye, Showscan eases the mind's reliance on persistence of vision — dramatically enhancing realism and heightening visceral impact. Trumbull will direct, and an April 1980 start date is anticipated.

Portions of the warp drive shots requiring camera pan and tilt were filmed under motion control. Then, since the system was not sophisticated enough to do both, the streak portions were done manually by locking off the camera and hand-incrementing it down a track to obtain a progressively blurred image on each frame. Background stars were likewise streaked, using the Compsy multiplane system to sandwich together numerous levels of exposure, all moving simultaneously in relation to the camera. Multiplane explosions of light — also shot on Compsy — employed a circular point-source pattern and a revolving filter wheel to shift colors in midstreak.





Ridley Scott
H.R. Giger
Dan O'Bannon
Brian Johnson
Nick Alder
Carlo Rambaldi
Roger Dicken
Michael Seymour
and others discuss...

CREATING AN ALIEN AMBIENCE

No great insight into corporate mentality is needed to understand 20th Century-Fox's decision to commit production funding to *Alien* — a decision made, appropriately enough, on Halloween day, 1977. Only a few short months before, Fox had released *Star Wars* to the most enthusiastic response in cinema history; the previous summer it had monopolized boxoffice returns with *The Omen*. With enough astral adventure to attract the *Star Wars* set and sufficient hard shocks to appeal to *The Omen* enthusiasts, *Alien*'s relentless death-struggle between a crew of galactic teamsters and a cosmic juggernaut presented an attractive hybrid — perhaps even an heir apparent to boxoffice sovereignty.

Curiously, much of *Alien*'s awesome horror had its precursor in the broad parody of *Dark Star*, a cult classic painstakingly pieced together on the slimmest of shoestring budgets by two University of Southern California film students, John Carpenter and Dan O'Bannon. In the midst of exhaustive production chores which included co-writing the script, directing the special effects, and acting as one of the *Dark Star*'s space-weary crewmembers, Dan O'Bannon decided to write yet another science fiction screenplay, similar in theme but totally different in tone. Before he could get more than a good start on it, however, it was set aside in the rush of other ideas and other projects.

As an offshoot of his effects work on *Dark Star*, O'Bannon was hired in 1975 by European surrealist filmmaker Alexandro Jodorowsky to engineer the elaborate effects for a proposed multimillion-dollar adaptation of Frank Herbert's epic *Dune*. After six months of heavy preproduction in Paris, however, anticipated financing failed to materialize and the project collapsed resoundingly. Broke and depressed, O'Bannon found himself back in Hollywood camped out on the sofa of fellow writer Ronald Shusett. Determined to come up with a marketable filmscript, O'Bannon retrieved his portable typewriter from storage and dug out his long-dormant stab at a science fiction thriller. "It was only about twenty pages long, and pretty sketchy; but I remember thinking it was one of the best beginnings I'd ever had — I just didn't know where the hell to go with it. At that time, it started with the alien transmission and the awakening from hypersleep, and went up through the discovery of the dead space captain inside the derelict. Beyond that, my ideas were kind of nebulous. I figured the crew wouldn't get off the planetoid until the end and that the creature itself would be some sort of psychic force; but I was having trouble working it out. It was Ron who finally broke the ice. He brought up an old idea I'd had about gremlins harassing a B-17 bomber crew on a

night mission over Tokyo and suggested I make the alien creature physical and have it stalking the crewmen on their own ship."

Interrupted only by frequent brainstorming sessions, O'Bannon sequestered himself in solitude, emerging in three months' time with the first of many scripts that would eventually evolve into *Alien*. Set in 2087 A.D., the script began on the commercial starship *Snark* with the intercept of an indecipherable radio transmission. Awakened from hypersleep, the crew diverts to a storm-swept planetoid where the cyclic signal is traced to the remains of a downed spacecraft, perforated by gaping holes of indeterminate origin and empty but for a lone skeletonized extraterrestrial lying in repose at the controls. With the large misshapen skull as proof of their finding, the landing party returns to the *Snark*. Subsequent sighting of an ancient stone pyramid, however, prompts a second excursion onto the planetoid surface. Inside the towering structure, one of the crewmen is attacked by a small alien organism which plants itself unyieldingly over his face. Though efforts to break its grip fail, the alien assailant soon drops off of its own accord and dies. Anxious to leave the planetoid far behind, the crew sets course immediately for earth, totally unaware that their unwitting shipmate is now playing host to an incredibly fast-growing alien parasite. Shortly after lift-off, the deadly violator rips a massive hole in its victim's chest and struggles free, escaping unchecked into the ensuing pandemonium. Evading capture, the beast rapidly matures into a multitentacled monstrosity and begins decimating the remaining members of the crew.

O'Bannon's original intent was to produce a low-budget script that he could package independently, with himself as director. Shusett, however, saw a greater potential and convinced O'Bannon that it should be pursued as a major studio production. Several unsuccessful submissions later, a mutual friend passed the script to writer-director Walter Hill who had only months before joined forces with producer Gordon Carroll and writer David Giler under the banner of Brandywine Productions. Hill, who had begun in the business writing such films as *The Getaway*, *The Drowning Pool* and *The Thief Who Came to Dinner*, and had recently both written and directed *Hard Times* and *The Driver*, had a keen eye for action and drama. He felt the *Alien* script needed work, but immediately sensed great commercial potential. After several weeks of negotiations, Brandywine optioned the O'Bannon script in October 1976.

Toward the end of the six-month option period, Walter Hill ran the script through a fast rewrite, putting it in his own distinctive style and adjusting the narrative somewhat to fit his sense of the dramatic. It was then presented to 20th Century-Fox, with whom Brandywine had a first-refusal production agreement. Though Fox had previously turned down the O'Bannon script, they agreed to commit development money to the project based on Hill's rewrite and his expressed intent to direct it.

O'Bannon, who had reluctantly abandoned any practical hope of directing *Alien* as a major studio production, had nevertheless

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article by
Don Shay

pressed for a compensatory role in the area of creative design and special effects. An agreement to that effect was made with Brandywine, and when Fox agreed to develop the production in late March, O'Bannon was given a small office on the studio lot where he could begin preproduction design while Walter Hill and David Giler continued to rework the script.

Central to Dan O'Bannon's visual concept for the film was the depiction of three totally diverse cultures — the earth culture as represented in microcosm by the *Snark* and its crew; the culture of the alien space voyagers; and the culture of the planetoid's indigenous primitives. To exploit this concept to its fullest, O'Bannon intended to engage a different and distinctive designer for each. First to join the team was Ron Cobb, a noted cartoonist and illustrator, who had provided O'Bannon with counsel and preliminary concept sketches while the first draft script was still being formulated. Cobb, whose prior film work had been limited to designing the *Dark Star* spacecraft and several of the Cantina aliens for *Star Wars*, excelled in depictions of speculative technology and was therefore assigned the earth ship and its various systems. O'Bannon next engaged British illustrator Chris Foss. A fellow alumnus of Jodorowsky's *Dune*, Foss possessed a colorful and flamboyant style O'Bannon considered ideal for the derelict ship and its benign aliens. O'Bannon also looked to his *Dune* experience for the third, and in many respects, most critical member of his design team — H.R. Giger, a Swiss surrealist painter with an unexcelled capacity for creating nightmare imagery.

At writer Dan O'Bannon's request, Swiss surrealist painter H.R. Giger prepared three airbrush renderings of an alien face-hugger concept during the early phase of Alien preproduction. Though startling and nightmarish, the paintings proved insufficient to instill in the producers O'Bannon's conviction that Giger should be engaged to design all three of the forms demanded by the script. It was not until months later, after Ridley Scott had been signed to direct, that O'Bannon was successful in finding an ally. Scott loved Giger's work, and his enthusiasm prevailed. Within weeks, Giger was fully involved — dredging up alien lifeforms from the depths of his subconscious and committing them to paper.

"Giger was hired onto *Dune* just before the project collapsed," O'Bannon recalled. "We met just once in a hotel room in Paris where I spent an afternoon with him and Jodorowsky. I took a couple of his art books home and studied them, and I remember thinking this guy could just do one *unbelievable* job on a horror movie. Later, when I was writing *Alien*, I was so sure I wanted a Giger monster that it hardly seemed worth my while even to try and visualize it myself. I did have some vague parameters — I knew there would be a little thing like a squid that would jump onto the face; and I knew there would be something else like a worm that would come out of the chest; and then I knew there would be a big one which would probably be a man running around in a rubber suit. Beyond that I spent all my attention on what these three forms did, rather than what they looked like.

"But when I tried to get Giger on the picture, I got a lot of resistance. They hired Ron Cobb and Chris Foss at my request rather readily — even brought Foss over from England — but there was just something about Giger; they didn't want to touch him. I think maybe Walter Hill didn't like his work. Anyway, I kept hammering on them; and finally Gordon did send Giger a letter and a small check as a retainer — but nothing beyond that. They wouldn't take the necessary steps to work out a contract and try to get him over here."

Once the initial contact had been made, though, O'Bannon telephoned Giger at his home in Zurich, described the project to him, and pleaded his case for a Giger alien. Giger was somewhat

hesitant to commit himself totally — he had never been paid for his work on *Dune* and the experience had left him generally wary of filmmakers. He agreed, though, to do a few preliminary designs for the creature's initial form. "As an idea of what he wanted, Dan O'Bannon sent me a sketch he had done of this thing popping out of an egg — it looked kind of like a flying omelet. To me, the appearance of something should be determined by its function, and since this creature had to jump out of an egg and grab onto someone's face, I first thought about what it would need to do this action. I started out with a body that looked kind of like a large sex organ — which is what it was, really — and I added two hands to hold the head and a long coiled tail that worked like a jack-in-the-box spring. Then, since it had to pry open its victim's mouth, I gave it an instrument something like the old Egyptians used on their dead to force open the mouth and let the spirit out. I did two paintings of it, plus a cutaway of the egg with the beast curled up inside, and I sent slides of them to Dan O'Bannon."

The Giger paintings readily affirmed his ability to translate the ideas of others and invest them with his own jarring imagery. But his face-hugger, as the initial alien form came to be known, covered not only its victim's face and head, but much of the upper torso as well, and as such was too large for use in the film. "The thing was supposed to fit on the face like a glove," O'Bannon remarked. "Giger's English is very good, but German is his primary language; and I guess I just didn't get that point across the first time around. They were certainly disturbing, though. When the transparencies arrived in the mail, Gordon took one look at them and said, 'The man is sick.'"

Faced with a continuing lack of enthusiasm over his first choice for an alien designer, O'Bannon turned Ron Cobb loose on the problem. By then, the originally conceived division of labor had fallen apart anyway, and both Cobb and Foss were busy churning out increasingly more elaborate concepts for the earthship exterior. The studio had not yet given a production go-ahead, Walter Hill was developing another film he intended to make instead, and the *Alien* preproduction effort was suffering from a pronounced lack of direction.

When the production commitment finally came, Fox was anxious to proceed as quickly as possible. For reasons of economy, it was decided the film would be made at Shepperton Studios, outside London, and a July 1978 date was set for the start of principal photography. A number of directors were considered, but ultimately the job went to Ridley Scott who had learned the art of audience manipulation while producing literally thousands of commercials for British television. Although he had done some dramatic work on television as well, the only feature film to his credit was *The Duellists*, a richly textured and visually elegant period piece which had earned him worldwide critical acclaim and a Special Jury Prize at the 1977 Cannes Film Festival.

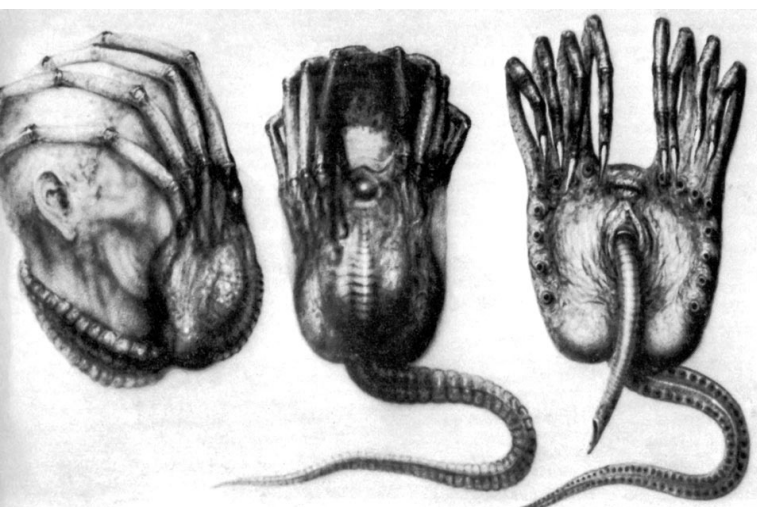
No sooner had Ridley Scott agreed to do the picture than he found himself confronted with a myriad of problems, not the

least of which concerned what form the alien beast should take. With but few exceptions, attempts by fellow filmmakers to depict extraterrestrial lifeforms had ranged from the disappointing to the disastrous. Decidedly terrestrial design criteria, calling for human actors in costume or varying types of mechanical contrivances, had seldom produced a convincing alien. Even as prodigious a talent as Stanley Kubrick — after months of exasperating and costly experimentation — had elected to let his extraterrestrials remain unseen in *2001: A Space Odyssey*. In more recent years, George Lucas had taken a rather tongue-in-cheek approach to the alien problem in *Star Wars*, while Steven Spielberg had drawn upon the mythos of purportedly genuine sightings for *Close Encounters of the Third Kind*. *Alien* demanded something altogether different — a totally frightening, totally convincing, totally alien creature of awesome strength and unbridled ferocity.

“When you take on a subject like this,” Ridley Scott remarked, “after the initial flush of excitement, the problem of what the hell it’s going to look like suddenly starts hanging over you like a thundercloud. How do we do the beast in its various forms? We had a similar problem with the alien transmission over what it should sound like. We never did sort that one out, and finally we decided to ditch it rather than have something hokey. But of course, we couldn’t ditch any aspect of the alien — one had to see it at some point or other. So I arrived in Hollywood with that misgiving and ended up going through about seven months worth of preproduction drawings without finding anything I really liked. There was the usual blob and the clawed creature and all that sort of stuff, which wouldn’t have been right even if we’d done them well. I think I would have been embarrassed by them rather than proud; and it was desperately important for me to be proud of it. I had visions of screwing around with this for months; but as it happened, it worked out very quickly. Just after I got to Hollywood, Dan O’Bannon came in with a copy of Giger’s *Necronomicon* and said, ‘What do you think of this?’ I started leafing through it until I came to this one half-page painting, and I just stopped and said: ‘Good God, I don’t believe it! That’s it!’”

Scott had lighted upon Giger’s *Necronom IV*, a malignant nightmare vision — part-insect, part-human, part-serpent — with an obscene, elongated head, dark bulbous eyes, and a vile array of teeth. “The book had just been published,” O’Bannon recalled, “and Giger sent me the first one off the press. The text was in German and it was hand bound. I was really flattered. I didn’t realize until later that the reason he’d sent it to me was because he wanted me to use it on the producers. He didn’t think they were sufficiently impressed with his work. I thought the book was brilliant — the man has a real knack for coming up with disturbing imagery. So I was pleased that Ridley liked it. But when he found that thing with a big long penis for a head I kind of thought: ‘Aw, phooey! Giger has some much more grotesque stuff in his repertoire. That’s just sort of man-shaped.’ But then I figured, ‘What the heck, Giger will give them something better,’





so I decided to keep my mouth shut."

Convinced that Giger was the man for the job, Ridley Scott, accompanied by Gordon Carroll and David Giler, flew to Zurich in early February to meet with him. They departed with a commitment from Giger to design not only the alien forms, but the planetoid's spore-infested pyramid as well. "At first I was hired just to do designs," said Giger. "Ridley Scott told me, 'You make the designs and we'll find someone who can build them exactly the same.' I liked this because I could stay in Switzerland and just fly to London once in a while to show them my work. So I began to work on *Alien* — day and night, because the time to do it was *very* short and I had no experience in working on a film like that. I wondered if it was possible for someone else to transform my stuff in three dimensions; but there are a lot of specialists around, so I was very hopeful."

Securing H.R. Giger's services was a major coup for Ridley Scott, but was not in itself a solution to the picture's multifaceted design problems. Faced with the inevitability of having to design and construct from scratch virtually everything that would appear in the film, and with only a few short months in which to do it, Scott realized that his selection of a production designer was critical. His choice for the job was Michael Seymour. For the next nine months, Seymour would assume personal responsibility for the physical look of the film, and for making certain the sets were constructed to specification and completed on schedule. Although he had served in various design capacities on feature films such as *The Charge of the Light Brigade*, *Blow-up*, *Isadora* and *Theater of Blood*, much of Seymour's fifteen-year career had been devoted to television commercials, including two years in exclusive association with Ridley Scott's company.

Since eight months of chaotic preproduction design had failed to produce anything even remotely usable, the spacefreighter — redubbed the *Nostromo* — was still a major concern. As an enhancement to the film's visceral impact, Ridley Scott thought it important to develop on board the ship a sense of lonely isolation and deep space claustrophobia. So while the triple-deck vessel was truly monstrous in proportions, most of the living and working centers were confined to a small assemblage of functional modules clustered in one area of the ship.

"One of the first things I did," said Seymour, "was to begin making a quarter-inch scale cardboard model of the *Nostromo* interiors. It had all the corridors and all the various junction places for the bridge and the mess area and the autodoc and so on. Then we just sort of played around with it until we got the right sort of dimensions and settled on the layout — which is not a particularly unusual thing to do. What *was* unusual was that we actually built it that way. The whole thing was a practical, functioning maze, and people who entered the set were bewildered to find themselves in this complete, self-contained world. For that reason, it was good for the actors — it gave them a geography to work in which was real. It was almost like shooting on location. We did, in the end, float sections away for ease of

shooting; but basically, whenever possible, we retained the corridors and the walls and shot within them."

"The thriller aspect of the story is very much integrated into the long corridors and staircases," Scott affirmed, "and I thought it would be better for the actors — and therefore better for myself — to have the set built in composite rather than in separate elements. That way, you could run down a huge length of corridor, round a corner and into an actual room; and you'd know exactly where you were. In a funny sort of way, though, it works out more expensively to do that, because you get more waste. You may not need a particular corner or segment of the set, but you go ahead and build it anyway to get the full composite effect."

"Actually, my first thoughts were to build the whole ship three decks high," Seymour added, "so they'd actually climb down companionways from one level to another. That idea was abandoned because it would have presented quite complicated construction problems, and also shooting problems. But I still feel the economics would have worked out quite well, because we could have contained the vast majority of the show on one stage. As it was, we were spread out over six of them."

Credible special effects, all the more critical in the wake of *Star Wars* and *Close Encounters of the Third Kind*, had been a major concern from the outset. Less than confident that Dan O'Bannon's limited experience qualified him to handle the effects on a major motion picture, Brandywine had begun casting about for a suitable alternate even before a production commitment was secured. Since Douglas Trumbull and John Dykstra, the obvious luminaries in the field, were unavailable, the producers looked to England where many of the more demanding effects pictures of recent years had been produced. A logical candidate was Brian Johnson, then in the process of wrapping his second and final season as director of special effects for the *Space: 1999* teleseries. Johnson met with Gordon Carroll and Walter Hill to discuss his possible participation in *Alien*, but indicated at the time a standing commitment to do *The Empire Strikes Back* for Lucasfilm Ltd. When Ridley Scott took over as director, Johnson was approached once again. Although he and associate Nick Alder had since moved on to *Revenge of the Pink Panther*, and in March were to start preproduction on the *Star Wars* sequel, Johnson agreed to tackle *Alien* simultaneously provided George Lucas and Gary Kurtz had no objection.

"I probably shouldn't have tried to tackle both projects at once," Johnson admitted. "It was just too much. At the time we began, though, we had relatively few shots to do. But then they gradually began to increase until we got up to a hundred or more; and then it dropped back down a little bit. I don't know how many we finally had, but it was a lot. Plus we did a lot of things over and over again, because Ridley's the kind of director who likes to see how something looks in dailies and then modify it — he's never happy with the first thing he sees."

Leaving Nick Alder to finish up *Revenge of the Pink Panther*, Brian Johnson went to work immediately on *Alien*. "Basically

As unabashedly sexual in appearance as it was in function, Giger's early face-hugger was equipped with a long, tightly-coiled tail by which it could launch itself bodily from its egg. Once implanted on its intended host, long finger-like protrusions were employed to hold the head firmly in place while an inseminating organ was thrust down the victim's throat. / Although many of the basic elements remained intact, the original face-hugger was considered too large for its intended application. As a result, Giger modified his design to more closely fit a human face. In point of fact, however, the final face-hugger bears the creative imprint of a half dozen or more different people. / Giger's first chest-burster design, constructed very faithfully by Roger Dicken, was ultimately rejected by Ridley Scott who felt it looked too much like a plucked turkey.

what happens when I do a picture is I get together a whole team of craftsmen and technicians and we do both the floor effects and the model effects — usually by splitting into two separate teams. By operating that way, we're able to offer sort of a facility which is open to the entire production."

Although the main production unit would be shooting an hour away at Shepperton, the decision was made to headquarter the effects unit at Bray Studios where Johnson and Alder were already firmly established. Brian Johnson would supervise construction and photography of the models and miniatures at Bray; Nick Alder would supervise the floor effects at Shepperton.

Michael Seymour, meanwhile, was assembling his own crew. For his two primary assistants he chose art directors Les Dilley and Roger Christian. Dilley, a *Star Wars* veteran, was tasked with supervising the construction side of the production; Christian was charged with set dressing and props. Ron Cobb was flown over from the United States to develop concepts for the *Nostromo* interiors. Within a few weeks, the art department would expand to more than a dozen artists and draftsmen, and would remain substantially at that level until the closing days of the production.

By the time Dan O'Bannon arrived in England, design and effects initiatives were already underway, and his prerogatives in those areas had been totally usurped. "I had a contract with Brandywine that supposedly guaranteed me to be the production designer and the director of special effects. But it turned out the contract had a loophole — a thing called 'pay-or-play' which, in this specific instance, meant that they had to pay me, but they didn't have to use me. So what they ended up doing was bringing me over there and putting me on salary and expenses, but without a job."

Budget was an immediate and lingering problem, particularly since Fox had originally obligated only \$4.5 million to the production. Convinced that \$4.5 million was painfully inadequate to the task, Ridley Scott personally storyboarded his own \$13 million concept for the film. Fox balked at the revised estimate, but agreed to compromise at \$8.5 million. Even at that, Michael Seymour's budget had to be cut by nearly half and Brian Johnson's plans to incorporate motion control model photography had to be sacrificed.

Since the convincing achievement of three very different and very demanding alien lifeforms was vital to the picture, Ridley Scott and the producers decided to look beyond the effects department for an appropriate specialist to accomplish the task.

First choice for the job was Academy Award-winner Carlo Rambaldi. In twenty years of creating effects for European film companies, Rambaldi had perfected a means of mechanically animating a wide range of otherwise inanimate objects. He had been brought to the United States by Dino De Laurentiis to apply his technique to *King Kong* — most obviously in the forty-foot mechanical ape De Laurentiis had insisted upon, but more effectively in the seven ingeniously-articulated heads which invested

the man-size Kong with a wide range of expressions. Following *King Kong*, Rambaldi devised the mechanical systems for another De Laurentiis picture, *The White Buffalo*, and then returned to his native Rome. A few months later he was recalled by Steven Spielberg to design and execute the mechanical alien featured prominently in the climax to *Close Encounters of the Third Kind*. At this point, Rambaldi decided to settle permanently in Hollywood where his unique talents seemed best appreciated. When approached by Gordon Carroll, Rambaldi was busy working out of his garage on the first of thirty vampire bats he had designed for *Nightwing*. Though enthusiastic about the prospect of working on *Alien*, he was already overcommitted to other projects and could offer no guarantees.

In his place, associate producer Ivor Powell suggested sculptor and model-maker Roger Dicken, whom he had known since their days together on *2001: A Space Odyssey*. Dicken had subsequently matriculated into effects work on numerous fantasy and horror films, having built prehistoric models for animator Jim Danforth on *When Dinosaurs Ruled the Earth*, and the more recent puppetized creations from *The Land That Time Forgot* and *Warlords of Atlantis*. Dicken, who preferred to work from his own designs, was hesitant about *Alien*, but ultimately elected to accept the assignment.

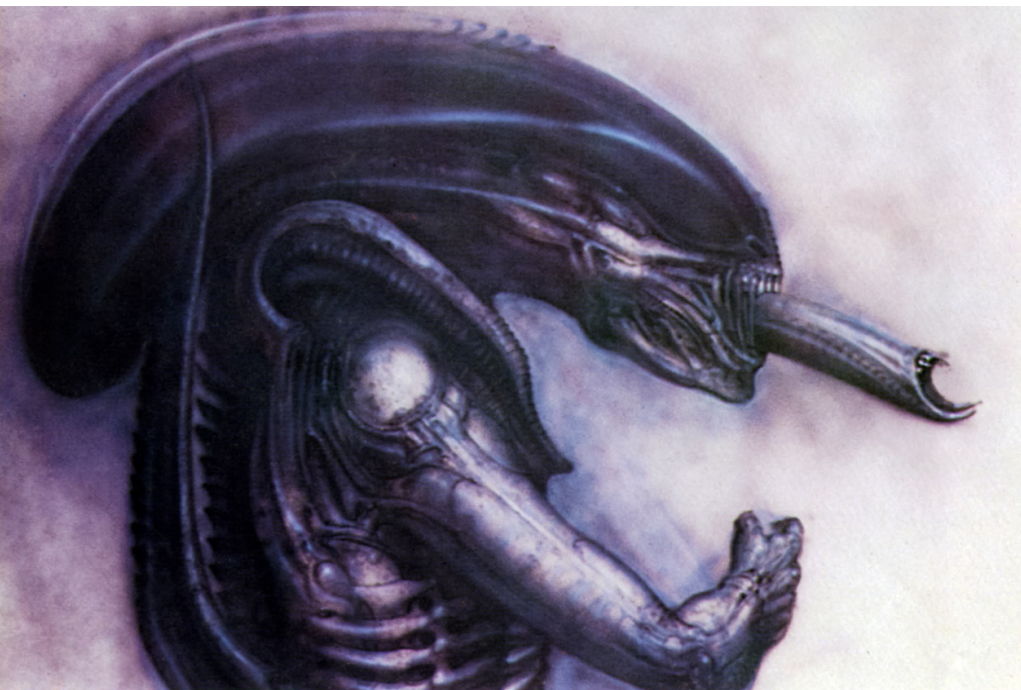
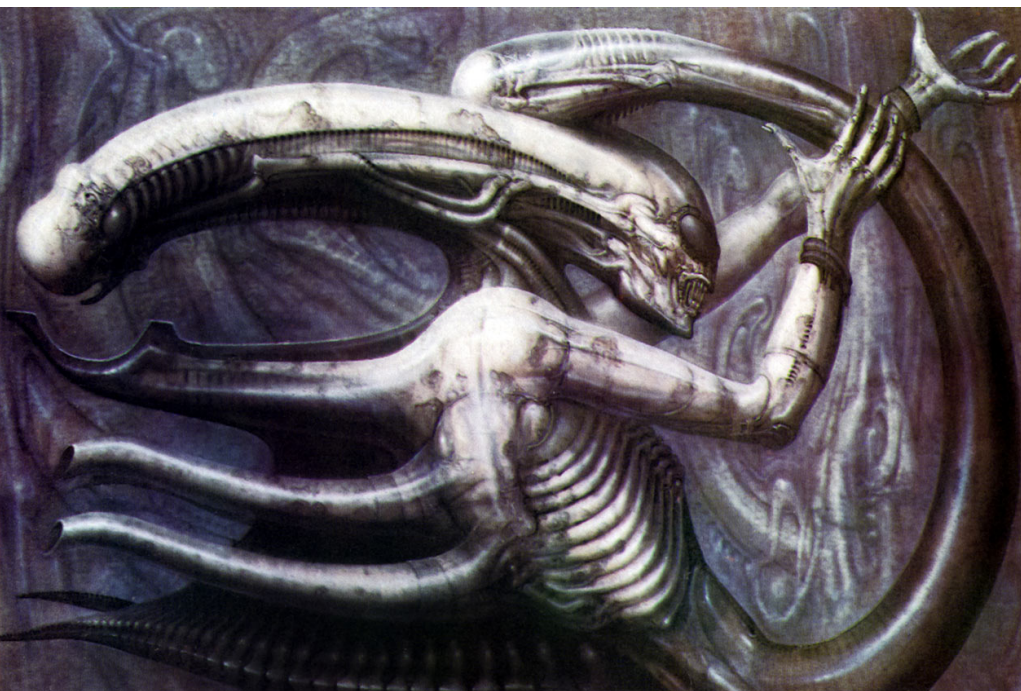
"In the beginning we had no idea what the alien should look like," H.R. Giger revealed. "In most horror movies, the monster looks very unbelievable and sometimes ridiculous — and once you see it, the film is over because it looks just like a man in a suit. Ridley Scott and I didn't want this. We wanted a very unusual monster — a believable one — and Ridley planned to show it only in little bits, detail by detail, so it wouldn't be given away from the beginning."

Although Scott had related very strongly to Giger's *Necronom IV*, he wanted to explore other possibilities before committing himself irrevocably. His first inclination was to use a totally nonhumanoid shape to escape the man-in-a-rubber-suit syndrome. To this end, some thought was given to devising a totally mechanized alien, but the time and money needed to achieve a convincing representation of an alien lifeform in this manner proved prohibitive. Stop-action model animation was considered and dismissed for similar reasons.

Reconciled to using a human being in some sort of a costume, Scott flirted briefly with the idea of using contortionists. "I had a guy come into my office who ran around on his hands with his head tucked in and his feet stuck out. He looked like some strange sort of crab. He ran all over the top of my desk, and then hopped off on his hands and scuttled across the floor. It was amazing, but he was limited in what he could do. I even brought in a whole family of contortionists with the idea of taking an adult contortionist and then somehow carefully strapping two very small children, who were also contortionists, onto him in various ways. You can imagine if you did that, and then covered them all with some sort of a suit, you'd get a very strange-looking object. It could really scare the shit out of you coming

For the landing and takeoff scenes, a fourteen-foot model of the Nostromo was mounted on an extended forklift arm and flown remotely from a television monitor. To simulate engine turbulence, the miniature setting — carefully fashioned from a Giger sketch — was blanketed with fuller's earth and colored powders and then subjected to high-pressure blasts of carbon dioxide and nitrogen channeled through the Nostromo's exhaust ports.





down a corridor."

Roger Dicken, meanwhile, was getting impatient. "Nobody seemed to know what the hell they wanted. I went to about three meetings in London and watched these characters rolling around on the floor — and quite frankly, I thought it was a bit Mickey Mouse. I mean, it was obvious to me that none of this was going to work, but I had to just sit around wasting time while everybody else figured it out. I sat through quite a few more meetings while they ran through football players and wrestlers and very tall men. Then, for a while, they thought they'd use an ordinary-sized guy so there wouldn't be any problems with stunts and all. At that point, I even offered to be the monster myself. I figured if I was going to make the suit, I might as well be in it."

"Finally, we decided to make a very elegant creature," Giger said, "quick and like an insect. Ridley Scott had an old photo of Leni Riefenstahl with a very tall Nubian; and he was impressed with that, so we decided to make a suit for a tall, very thin man. Ridley still loved the *Necronom* in my book and wanted something like it, which was nice for me because I could use my own designs and had not to put somebody's else's work into my own style. I liked very much the long head; but I kept thinking that a head this long needs to have a certain function. So I gave him a very long tongue, also with teeth — so there are tongue teeth and mouth teeth. I think it's very impressive in the film to see the lips open and then the jaws, and then you see the tongue come out with its teeth — an escalation of movement. My first design for the alien had a large black eye, but then we decided to make it eyeless. We thought it would be more frightening to have a monster that was blind but could still find exactly what it wanted. So the eye became instead a translucent shell that covered the top of its head."

Aside from that, the final alien differed only in detail from Giger's original concept paintings. Its basically humanoid body became less so with the incorporation of skin texture and coloring more characteristically reptilian, and the single spiked protuberance on its back was expanded fivefold and augmented by a long prehensile tail. At Dan O'Bannon's suggestion, the creature's hands were given six digits each — four fingers and two opposing thumbs.

"I'm afraid Ron Cobb's ego was sorely wounded when he didn't get to do the monster," O'Bannon commented. "He was endlessly frustrated because he could design aliens without number and they were all convincing and all unique and all startling to look at. The only problem was, he's a rationalist. I noticed this when we first started designing the picture. All these different things he was doing were coming out so well that I decided to have him take a crack at the derelict spaceship. But when I asked him to come up with an irrational shape he got very disturbed. He couldn't handle that. He kept coming up with convincing technology for a flying saucer or some other kind of UFO. And when it came to the alien, he had the same problem. His designs just weren't as bizarre, or as bubbling up from the sub-

conscious, as the stuff Giger was doing. Cobb's monsters all looked like they could come out of a zoo — Giger's looked like something out of a bad dream."

Although a general concept had been agreed upon, the final appearance of the full-size alien would evolve gradually in the months to come. In the interim, Roger Dicken was given Giger's approved design for the intermediate form, which came to be known as the chest-burster. "To me, it looked like a plucked turkey," Dicken remarked, "a veined, repulsive-looking thing with fangs. I said: 'You want me to make *this*? It looks like a turkey.' And they said, yes, that's what they wanted. Well, there wasn't a need for anything very complicated, since all it had to do was force its way out of the chest and then flop onto the table; so we figured the best approach was to build it as a hand puppet, about three times life-size so I could get my hand up into the neck. Obviously, you couldn't get something the size of a large turkey out of a human chest, but initially they were going to cheat it somehow."

Working out of his home workshop in Pangbourne — about an hour's drive from Shepperton — Dicken began on the chest-burster in mid-March, sculpting it out in plasticene and then casting it in foam plastic with a latex rubber skin. After spending about three weeks on it, he took it into the studio for a trial run.

"Giger's drawing was kind of a Francis Bacon-type thing," Ridley Scott explained, "and it looked just hideous. It was covered with blood and had a large underhung jaw with some really lethal-looking teeth in it — totally obscene and very frightening. And in fact, Dicken reproduced it very faithfully. The problem was that what looked great on paper didn't in actuality. Dicken normally works everything like a glove puppet, and so he brought this thing in and propped it on his knee. And while he was talking, he kept moving the head around so the bloody thing kept looking back and forth across the room — from Gordon Carroll to me, and then up his nose. The whole thing was entirely comical — it looked like some kind of a plucked, demented turkey. I was frankly terrified at the thought of getting a giggle at this time in the film, so we ditched the whole concept and started again.

"We went back and reexamined various illustrations and ideas, and tried to come up with something we thought would be the most frightening. I wanted more of a biological link between the baby, which is what we were really designing, and what the final creature would look like. And I wanted it to be a very smooth object. The other was all wrinkled and ancient-looking, like some malevolent Muppet. And when it came out, I wanted it to look very rude — and totally carnivorous. So to be honest, that beast was very much the product of several people — Giger and Dicken and me, and even a bit of Gordon Carroll."

Dicken was beginning to have misgivings about the collaborative nature of his *Alien* involvement, but nevertheless plunged into the revised chest-burster in mid-April. "Ridley ran over to Roger's house one day to have a look at it," Dan O'Bannon recalled. "It had a head that was pretty much a

Necronom IV, an obscene amalgam of insect, human and serpent, was selected by Ridley Scott from the pages of Giger's Necronomicon as a basic design for the full-grown alien. / The original intent was to construct an alien head to the scale of Necronom IV; but mounting such an ungainly shape on a human form proved impractical, so it was subsequently scaled down by nearly half. As a functional rationale for the elongated head, Giger incorporated a long serpentine tongue with its own formidable set of teeth. / Despite the involvement of numerous other craftsmen, the final product — worn in the film by 6'10" Bolaji Badejo — remained remarkably true to its original inspiration.

miniature version of the big one, and kind of an elaborate body with legs — like little dinosaur legs. It was just in clay at that point, and Ridley looked it over a bit and then reached out and pulled off the legs. Then he wadded up little pieces of clay like dolphin flippers and stuck them on either side behind the head, and said, 'There — that's it.'"

"The final thing ended up looking sort of porpoise-like," Dicken explained. "The head of the big alien with a tail on the end was literally all it was. But constructing it wasn't so simple, mainly because they wanted it actual size and it wasn't big enough for me to be able to put my hand inside and operate it. What I came up with was a curved metal rod which ran down into a hand grip. About halfway along — up where the neck would have been if it'd had one — was a flexible steel spring, and then the rest of the rod went up into the head area and then down underneath the jaw to give it strength. I ran a wire, through a series of eyelets, along the whole length of the rod and then down into a ring which fit around my finger; so when I pulled on the ring, the spring would make the front section bend over. On the front section, also, were the mechanisms for making the jaw open and the little arms move out. These were just activated by air. I ran little air tubes through the model and connected them to rubber squeeze bulbs, so all you had to do was squeeze one to activate the mechanism. There was also a little bladder inside the thing's chest so it could breathe, and a bladder on each side of the head so the gills would pulse. Then I ran another tube up to the mouth and connected that to a bottle of fluid, so that when you squeezed the bottle, saliva would run out. The teeth I made out of epoxy, and they were then metalized in a centrifugal vacuum machine. Everything was really very simple. What was difficult was getting it all to fit in this narrow sausage shape. It was also very difficult to hide anything. Normally, if you're working with a dinosaur, or something like that, you can slash him open and stitch him back up — you've got all kinds of scales and folds to conceal whatever you've done. But this thing was so smooth, with hardly any detail, that if you made a mistake it was damn near impossible to get inside it again without destroying it."

Dicken was working concurrently on the face-hugger. In the absence of anything more definitive, he had been given Giger's original concept paintings, which were greatly out of scale, along with some instructions from Ridley Scott on what modifications needed to be made. The guidance, however, proved inadequate to the task.

"There was a big meeting," Dan O'Bannon recalled, "and everybody was talking at the same time and trying to tell Dicken what the hell it should look like. Finally, Ridley pulled out Giger's book and said: 'Look, I want these fingers here on this page; and I want that over there for the back; and then I want the tail from this other page.' And Dicken was just confused. He couldn't absorb it all the way it was being thrown at him. So I asked Ridley if I could take a try at it, and he said, 'Go ahead.' So I went over to the art department with Dicken and we took a

drafting table and a huge piece of paper and some pencils. I drew two heads on the paper, and then I opened up Giger's book and put it down in front of us. 'All right,' I said. 'Ridley said he wanted part of this body, right?' And I sketched it out. 'And he liked these fingers.' So I added the fingers. 'And he wanted this tail.'

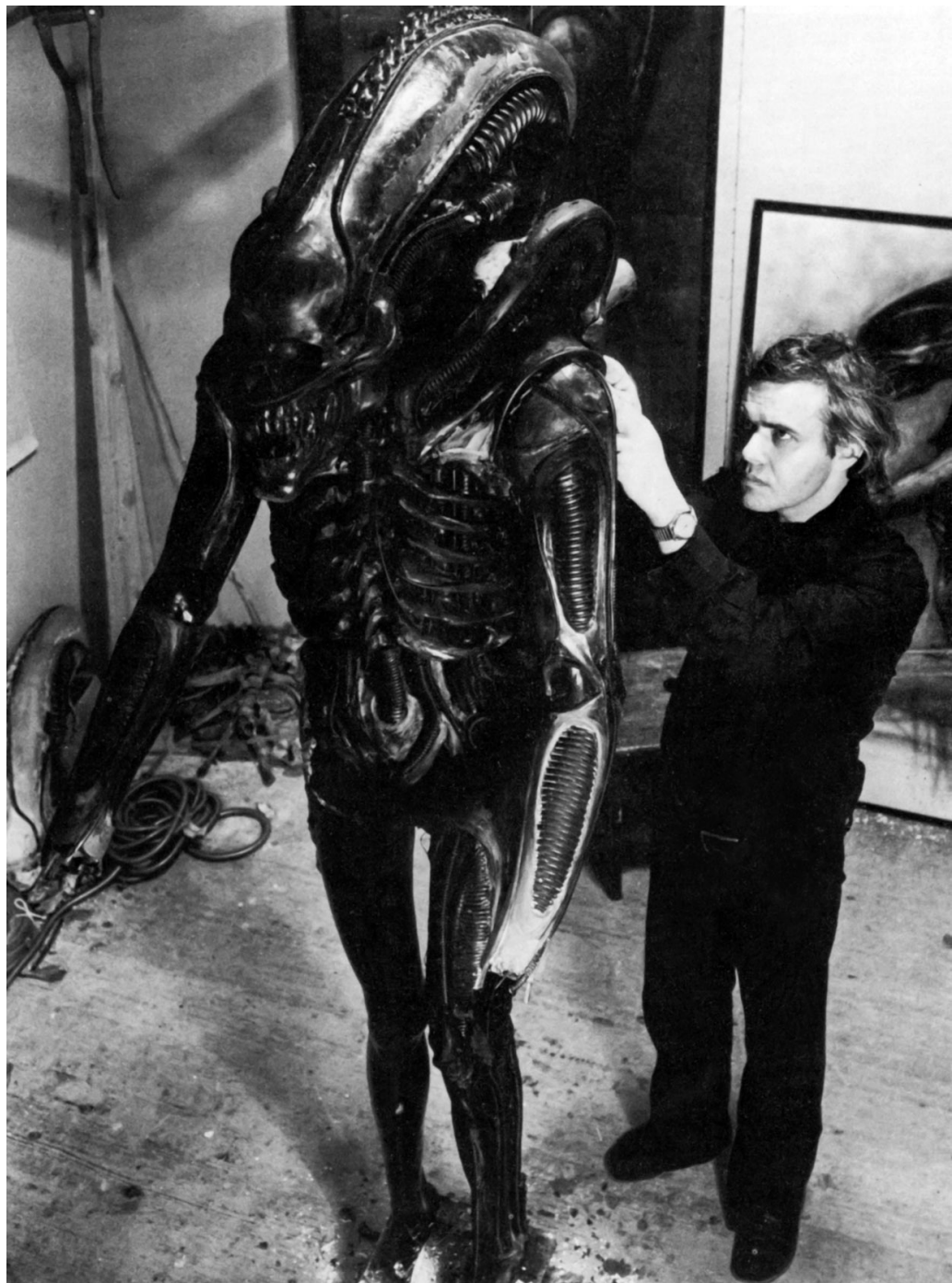
"Well, while we were doing this, Giger came in — his plane had arrived from Switzerland — and he had some new designs for the face-hugger. And they were very similar to what we were putting together on the drawing board — not identical, but similar. His had an eye on the back, and the shape of it was much more like the palm of a hand. I looked at them and I said, 'Oh, that's good.' Then Giger looked at the thing I was sketching with Dicken, and he said, 'No, that's better; that's much better.' I was really flattered. So I said, 'Then I should continue with it?' And he said, 'Oh, yes.' So we went on. When it came to trying to figure out what kind of a skeletal understructure the thing would need so the fingers could hook up, I got Ron Cobb over and he scrawled out his ideas — which, as usual, were excellent. Then I cleaned the whole thing up a little and did it in ink — exact size — and that's what we went with. I was really pleased, because I had kind of eclectically constructed the face-hugger out of the things that Ridley wanted and the things that Giger wanted, and some good ideas from Cobb and from Dicken. Then we put it through the blueprint machine, got Ridley to okay it, and Roger went off and built it."

"The face-hugger was sculpted in plasticene," Dicken explained. "Then I made a plaster cast and a slush rubber mold which I strengthened with fiberglass on the underside, ending up with a hollow crab-like shell. Inside was a metal spine going down the middle, with little metal sections on it to hold the articulated fingers. All eight fingers were cast from the same mold and were latex-covered, with aluminum armatures pinned at each joint so they would be absolutely flexible. These were sprung closed under tension. Then, from the tip of each finger, there were wires going up the inside, so that when you pulled on them, off-camera, the fingers would open and it could clip over the actor's face. To help hold it on, I put little eyelets in the fingertips and we ran rubber bands between them — under the head where they wouldn't show. The tail was just a flexible cord covered with foam and latex. All together, I made four or five face-huggers — one only that was fully articulated, one for underbelly shots, and about three dummy models that just had wire armatures so the fingers could be positioned."

"My own concept of the face-hugger was something a little more spiny, with claws — something you couldn't get ahold of even to try and pull it off. Self-preserving, in fact. To me, those long skinny fingers just didn't give the feeling that this thing had the strength to really cling onto someone's face like that. But that's how Ridley wanted them — thin and smooth. I'd also liked to have seen some kind of barbed fingertips rather than the smooth human-type nails they wanted."

Dicken's initial face-hugger made it through virtually

Ridley Scott examines the fruits of H.R. Giger's labor. Although Giger at first declined involvement beyond that of designer, he was ultimately persuaded to play a much more active role in the production. In keeping with his biomechanical style, Giger personally sculpted the large alien from plasticene, bones and various mechanical artifacts. / Intricately-detailed six-digit hands were cast in flexible rubber and worn like gloves. For closeups, effects supervisor Nick Allder developed an articulated hand with a full metal armature. / Working directly over a plaster replica of Bolaji Badejo, Giger sculpted his seven-foot creature — then to be transformed into a rubber suit by modeler Eddie Butler and a crew of studio technicians.





unscathed, as did his modified chest-burster; but the large alien form was still giving him major problems. "I was told they didn't want a rubber suit for the big alien. They wanted a translucent skin so you could see the actor's own muscles flexing; and for the head they wanted me to stick closely to the very large head Giger had on the illustration in his book."

It was not until early May that the protracted casting call for a suitable alien was finally completed. Selected for his physical stature and grace of bearing was a 6'10" Nigerian art student, Bolaji Badejo, whose first official tasking was to report to the plaster shop for a full-length body mold. From that, a life-size mannequin was produced and delivered to Roger Dicken. "I set the thing up in my lounge and spent a few days building up muscles and tissues on it in clay. I even did a wire mesh and cardboard mockup of the head — which looked ridiculous, because in order to maintain the scale from Giger's picture, the head had to be almost six feet long. It was just much, much too big to mount on a human form."

H.R. Giger had expressed a strong desire to fulfill his *Alien* obligations without relocating to London, and though Ridley Scott had acquiesced on the point, it was never his intention to let Giger remain in Zurich. "He didn't want to leave his workshop, which I could understand, and he'd had a bad experience earlier with film people — but I wasn't about to let him off the hook. I knew that if I could get him personally involved in the film he would become absolutely obsessive about it — and frankly, that would be one less aspect I would have to be obsessive about."

In late May, Gordon Carroll telephoned Giger and invited him to London to observe the progress being made on the alien forms. "When I got to England," Giger lamented, "I saw the version of my large alien and it looked terrible — like a dinosaur from Disneyland. I was very depressed because I don't like to do a nice design and then have it turned into something awful."

Partially as a result of Giger's reaction, Dicken's initial stab at capturing the large alien was rejected out-of-hand, without a great deal in the way of sound criticism to further guide him. "Dicken didn't see himself as a slave to Giger's design," O'Bannon proffered, "so he made a very free interpretation of it. He had no intention of literally changing this flat piece of artwork into a three-dimensional thing. It was just a design, and he was going to incorporate his own creative input and his own unique texture. However, when Giger came over and looked at the way Dicken had sculpted his stuff, he said: 'No, he doesn't understand. It's supposed to be exactly like what I painted — this is different.'"

Even though he had spent only a few days on the large alien, Roger Dicken had reached his limit. "I'd already had enough hassles with the chest-burster and the face-hugger to know that I just wasn't going to be able to come up with something workable in the amount of time I had left. So I ended up writing a letter to the production office and telling them that they'd better get somebody else to do the big one. Pandemonium set in, and they

said I was letting the picture down. But I just told them I wasn't going to give myself a nervous breakdown trying to create this damned thing in the time required and under those circumstances. If I'd been left to my own devices, perhaps — but not with all the continual changes and setbacks I'd come to expect after nearly three months of sweating blood over the smaller ones."

A frantic week followed, culminating with the collective realization that only by putting a full team of craftsmen on the project could they hope to have the pivotal alien lifeform completed in time. H.R. Giger, who had come to a private realization that he alone could adequately transform his designs from two dimensions into three, eased the problem somewhat by announcing his intent to remain in London and personally sculpt the creature to his own specifications. "Sculpting something is much more difficult than painting," Giger allowed, "because it has to look good from every angle. It's even more difficult if the object has to move. My style of painting is a combination of art nouveau and technical stuff. I call it biomechanics — kind of a surrealistic mixture of biology and technology — and I wanted the alien to have those same qualities. So I started out with kind of a statue of Bolaji, and directly over that I modeled the shape of the alien in plasticene, with bones and tubes and lots of mechanical things. The head I built up from a real human skull using plasticene and flexible piping and stuff."

Once established on the Shepperton lot, Giger made a unilateral bid to reaffirm the integrity of his highly personal vision by commencing to sculpt his own versions of the two smaller forms as well — this despite the fact that Roger Dicken's renderings of both were virtually complete. "He was trying to do all of them," Dan O'Bannon affirmed. "He was, of course, working on the big one; but on his workbench he was also well underway on both the face-hugger and the chest-burster. They were exquisite pieces of sculpture, too — better, I think, than what were used in the film. Especially the chest-burster. Giger *really* gave that thing a nasty mouth. It was much larger in proportion to the rest of the body, and the teeth were like oversized snake fangs, fully extended — a set both on top and on the bottom. I mean, he was building something designed for biting its way out — those fangs looked like they could go through a piece of steel."

Giger's face-hugger, on the other hand, looked much like the Roger Dicken version. "It was going to be very smooth and slimy," Giger explained, "with eight long, fine, but very strong fingers. The main difference was that mine was going to be translucent. I wanted the inside to be visible because it had a sort of skeleton under the skin. After I'd started building the two small ones, though, the producers stopped me because they were worried that I wouldn't get the big one finished in time."

For the big alien to function as Giger intended, however, would require the employment of talents and techniques well beyond the range of his considerable skills as a sculpture. Gordon Carroll again turned to Carlo Rambaldi, who had only recently relocated from his garage to a more spacious workshop

facility in Tarzana. With the majority of his other projects now under control, Rambaldi indicated he would indeed be able to devote some time to the alien. Earlier commitments, however, still precluded his remaining with the production until its completion.

Working from the script and from copies of Giger's artwork, Rambaldi determined the mechanical moves needed for the alien head and prepared several sketches and diagrams. "I figured the head would require seven different movements, so I proposed a series of mechanical joints and muscles activated by flexible cables. The front portion needed to pivot up and down and side to side, independent of the rest of the head. I wanted the lips to curl back; and of course, the mouth had to open and close. Inside, the tongue needed to move out and back, and its teeth had to open and close. And I also thought there ought to be a pulsating jugular movement at the throat."

Once the designs were made and the drawings completed, Rambaldi spent two weeks sculpting a two-foot-tall rendering of the alien in clay in order to give some three-dimensional form to Giger's concepts. He then video-recorded the full-figure miniature from all angles and forwarded the tape and drawings on to London. His efforts were reviewed by Scott and the producers, who then telephoned back and advised him to proceed with only the head mechanics. Since timing was critical and Rambaldi's availability limited, the remainder of the suit would be done at the studio. Three weeks later it arrived, with an accompanying cast of Bolaji Badejo's head to aid Rambaldi in determining spatial constraints and arranging his mechanics.

"The head they sent us was cast in fiberglass," explained Ralph Cobos, Rambaldi's chief assistant since *King Kong*, "and I spent about a week just getting to where Carlo could work with it. We couldn't make a plaster mold off it because it was rigid and had a lot of undercuts, so we went to a rubber mold which we had to do in segments. From that we made a polyurethane cast which gave us a flexible model to work with. Then we were able to use that to make our plaster mold. We had to go to a plaster mold rather than the rubber one because the special polyurethane that Carlo developed for his models needs a very porous mold. So all that took quite a while. After I made the mold, Carlo put a layer of clay in it to represent the final thickness of the skin, and then studied it to figure out where his mechanical parts were going to fit in."

"Since an actor had to wear the head it was very important to make it as lightweight as possible," Rambaldi elaborated. "I used fiberglass for the skull and moving parts, and aluminum inside for support. The tongue, for example, was fiberglass mounted on geared metal tracks and could extend about twenty centimeters — either very slowly or very fast. Each moving part was connected to a special sheathed cable — like hand brakes on a bicycle, only more flexible — which ran out through a hole in the base of the head. Normally, each moving part would require only a single cable, but the sideways movement of the head and the mechanism for the tongue required two opposing cables —

Carlo Rambaldi inspects the fiberglass casting of Giger's alien head, sent to him from London as the basis for his own mechanized adaptation. To attain the specific articulation required by the script, Rambaldi devised a series of mechanical joints and muscles activated remotely by flexible bowden cables. The actuating mechanisms were encased in a lightweight fiberglass skull covered with a custom-formula polyurethane skin. When finished, the alien contrivance weighed just under nine pounds and fit over Bolaji Badejo's head like an outsized helmet. / Although most of the project was completed in his California workshop, Rambaldi added final touches in London, including chrome-plated teeth and exposed facial tendons fashioned from rubber condoms. Much of the rich detail, however, was then obscured by the addition of a smooth translucent shell (absent here) which covered totally the upper portion of the head.

kind of like reins on a horse. So there were nine all together. The cables were seven meters long and connected to hand-operated levers mounted on a wooden panel. By operating the levers in various combinations, a great many moves were possible."

The foam latex skin which covered the fiberglass skull and concealed the mechanics was cast from the plaster mold by Ralph Cobos. Using a custom formula Rambaldi spent two years perfecting. Cobos was able to produce a quarter-inch layer of polyurethane with virtually the same textural properties as human tissue. "Regular polyurethane has two components," Cobos explained, "a base and a catalyst. Ours has seven. For some applications we might need more strength; for others we might want more elasticity. Since each additive controls a different variable, we can alter the characteristics of the polyurethane by varying its components. One of the things that makes Carlo's figures so unique is that his polyurethane has a nice skin on it when it comes out of the mold. It wrinkles like real skin and stretches like real skin. Regular polyurethane doesn't have a skin at all — it's just kind of spongy."

While Rambaldi labored some seven thousand miles away, the producers commissioned David Watling to construct yet another head, identical in appearance and function, as a hedge against the possibility that Rambaldi's would not work satisfactorily or he would be unable to deliver on time. Watling, whose engineering firm on the Shepperton lot had manufactured the seven R2-D2 units used in *Star Wars*, approached his tasking somewhat differently, however. "Our brief was to articulate the head with the same movements as the one Rambaldi was making, but by using a radio control system rather than cables. We therefore designed and built remote control devices which gave full proportional control to the lips and the position of the inner teeth mounted on the tongue. The main jaw and tongue were activated by air cylinders, which in turn were controlled by valves operated by the radio control system. The radio receiver and proportional servos were mounted in the head of the creature, while the air supply and a miniature battery pack were mounted inside the costume on the actor's back."

By the time principal photography began in early July, Dan O'Bannon's script had gone through five rewrites, none of which significantly altered the thrust of his original narrative. Most of the dialog had been rewritten, though, and emphasis on the characters had shifted. O'Bannon's crew of six had been essentially underdeveloped and virtually indistinguishable from one another; in fact, they had been written to be played interchangeably by men or women. The Hill-Giler crewmembers, while still sparse in characterization, had at least been broken out by sex and instilled with some semblance of individuality. Plot refinements were numerous, but the most notable addition to the script was the inclusion of a seventh crewmember — an implausibly perfect android charged with supporting a top secret company edict calling for preservation of the alien lifeform at all cost, even at the expense of the crew.

Tom Skerritt was cast as Dallas, the *Nostromo's* low-key cap-

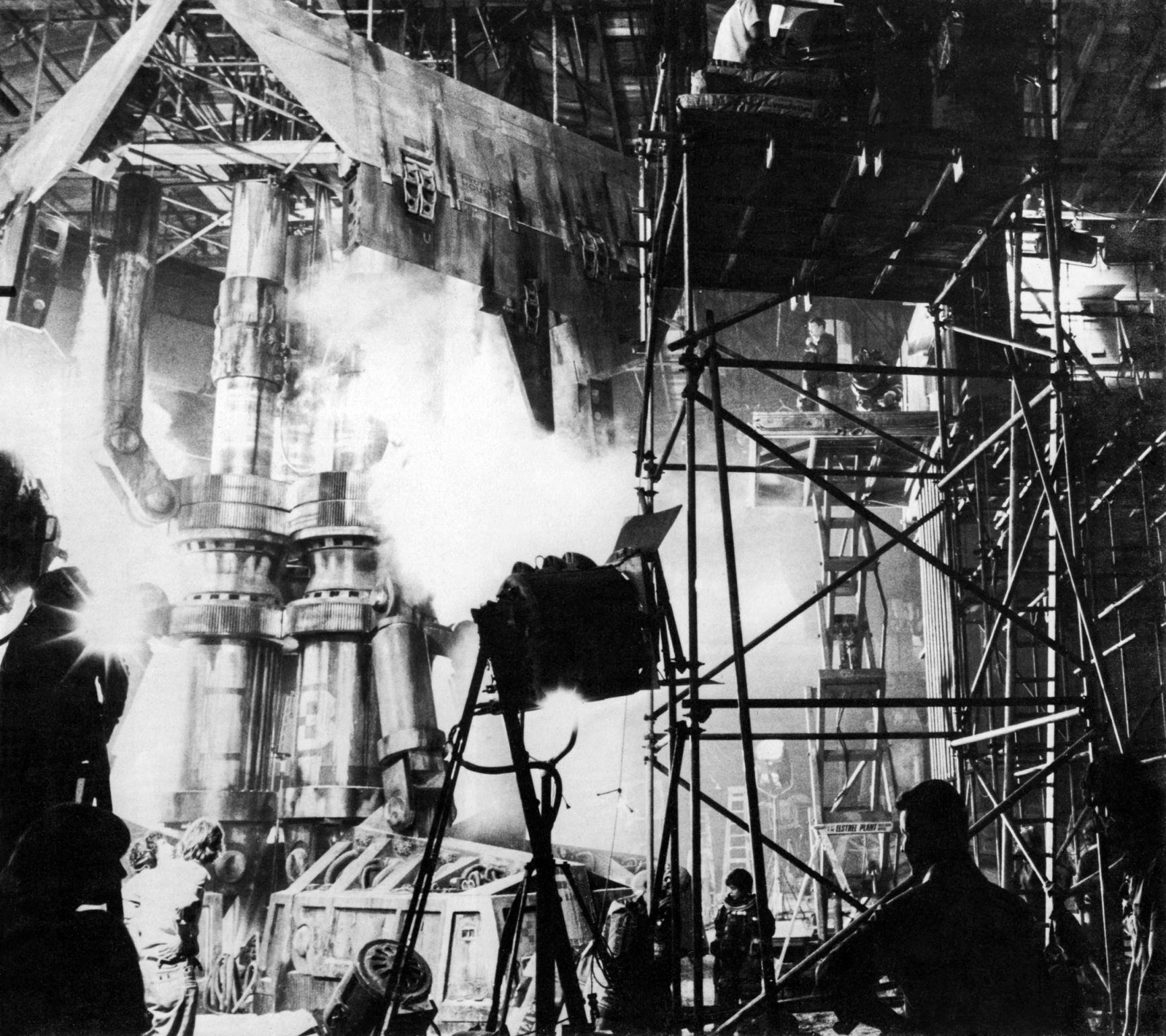
tain, whose early demise ran counter to norm for the genre; Sigourney Weaver was the fiery warrant officer, Ripley, sole survivor of the alien debacle; Veronica Cartwright was the mousy navigator, Lambert, totally unable to cope with the situation; Ian Holm was the icy science officer and closet android, Ash. Jon Finch had been signed to play executive officer, Kane, the alien parasite's first victim and unwitting host; but after several days of shooting he was hospitalized with a diabetic ailment and had to be replaced by John Hurt. Harry Dean Stanton and Yaphet Kotto rounded out the crew as engineers Brett and Parker.

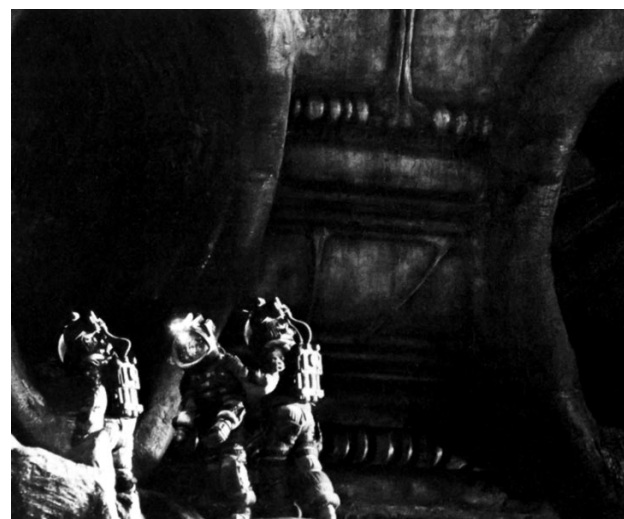
A major disappointment for Dan O'Bannon was the decision to eliminate the alien pyramid and relocate the egg chamber into a lower deck of the derelict spacecraft. "I saw the inhabitants of this planetoid as tough and primitive, and with an *extremely* complicated sexual cycle. Reproduction was very difficult for them and had therefore become central to their religion. And this pyramid was a temple to reproduction. When the astronauts come upon this crumbling structure covered with ugly angular carvings, they begin to realize that they are in the presence of real antiquity. They're unable to find an entrance at the base, so they scale the pyramid and discover at the top a flue that goes straight down from the peak. This was where the Kane character set up his tripod and winch and lowered himself down — way below ground level — to the floor of this chamber. Using his suit lights, he looks around in the darkness and in the middle of the room finds a huge stone plinth with blood drains in it. All over the walls are alien hieroglyphics. Also in there, centrally located, are these eggs — spores really. See, these alien beings had two sexes of their own, but they needed a third host animal to reproduce. So they'd bring in an animal, put it up on the plinth with a spore, and *whammo!* Then they'd lead the in-seminated animal off to an enclosure somewhere to await the birth. But the planetoid was now dead and this civilization had been gone for a million years. All that remained of it was this pyramid and the spores — which can survive dormant for incredible lengths of time under even the most adverse conditions. That's what I originally saw. And since I made it up, naturally I'm going to like it better; but to me, that's a lot more sinister sequence of events and a lot more ingenious than blurring the two cultures together."

"The pyramid was one of several ideas we had for the egg chamber," explained Michael Seymour, "but it was abandoned fairly early on — for economic reasons primarily, but also for time. The economic framework we were trying to work within was very restricted, and the amount of set construction we could afford was limited. There was also a limit to the amount of shooting time, and to the amount of screen time. All these factors were involved."

"It was also a matter of pacing," Ridley Scott added. "In the original O'Bannon-Shusett script, the walk about the planet was a lengthy process — terrifically interesting to read, but in film terms it would have been too long. If we'd shot it that way, it would have taken an hour and a quarter before we got to the part

To provide continuity between the miniature and live-action shooting, a forty-foot landing leg was constructed for the disembarkation sequence. Since the night landing was to take place in the midst of a raging dust storm, the massive set was lit harshly from above and inundated with huge amounts of wind-blown vermiculite. As a further enhancement to scale, three small children (lower center) were outfitted in diminutive spacesuits and used as stand-ins for the principal players.





where anything was really happening.”

Principal photography got off to a slow start, primarily because Scott and his crew had to shoot around the *Nostromo* interiors, most of which were still unfinished. A major sequence photographed during this period was the landing party's descent onto the planetoid surface. In order to convey the immense scale of the *Nostromo* and provide a visual link with the actual landing, which would be shot months later using miniatures, a forty-foot representation of one of the ship's landing legs was constructed on Shepperton's largest stage and surrounded with a rudimentary alien landscape. As a further enhancement to scale, three small children wearing miniature spacesuits stood in for the principal players during the long shots. To simulate a blinding dust storm, the stage was filled with smoke — actually a low-grade diesel fuel, vaporized and suspended in air — while giant wind machines inundated the playing area with grit.

“We used vermiculite,” Nick Allder explained. “In fact, we used a lot of vermiculite — somewhere in the region of two or three hundred bags a day. Normally I think it's used for insulation and things like that, but it was ideal for this purpose because it looks rather like small pebbles, even though it's actually very lightweight. Then, in addition to the vermiculite and the smoke, I used a lot of live steam venting out of the leg, just for atmosphere.”

Perhaps the first indication for the cast that they were involved in anything but a routine shocker came after the first couple weeks of principal photography. Barely adjusted to the claustrophobic labyrinth of Michael Seymour's ingeniously executed set, and still in the early stages of building credible characters from the painfully sketchy script, the small ensemble faced its first encounter with the alien horror only slightly more prepared than the ill-fated characters they were playing. Giger's alien was still under construction and under wraps, and Roger Dicken's work had been completed entirely off the lot; so the creature in its various forms remained a mere figment of individual imaginations. They had, of course, read the scripted account of the alien “birth” and seen a sketch or two, but nothing had primed them for the horror show Ridley Scott had in store.

“It took a long time to set up the shot,” Dan O'Bannon recalled, “and except for John Hurt, none of the actors were allowed on the set. The footage preceding the actual effect they'd already shot — all yakkety-yak and eating, and then John Hurt choking and falling across the table with everybody yelling and grabbing his arms and legs. They did all that the previous afternoon. The next day they were going to take it from that point on, and a lot of people on the crew who really weren't involved in the scene started showing up, myself included. We all staked out strategic spots around the set and waited — everybody wanted to watch.

“They'd already cut a hole in the table so John Hurt could get underneath and put his head and arms out. Then they put this false chest up over him that was made of fiberglass, with a big round hole cut in the middle of it and slots to fit over his

shoulders. For John to get himself into a configuration where it looked natural — his shoulders and arms and head in relation to that chest — he really had to twist back into a pretty uncomfortable position.”

Although the original intent had been to use Roger Dicken's handheld chest-burster throughout, Ridley Scott and the effects team had had subsequent second thoughts. “Roger wanted to do the whole thing by hand from under the table,” Brian Johnson explained, “but we figured by the time we got John Hurt in position, along with all the other gear we'd be needing, there just wasn't going to be enough room for Roger to get in there and exert the kind of pressure we wanted. He wouldn't have the leverage. So we decided what we needed was some kind of a hydraulic-type mechanism to get that initial violent thrust through the chest.” Too, since Scott anticipated a number of retakes, he preferred the predictability of a device which could guarantee precision and repeatability, take after take.

So Roger Dicken was contacted and asked to prepare a rigid version of the articulated chest-burster then under construction. “I'm a loner,” Dicken professed. “I like to work on my own; and I like to do the effect on my own, if I can. And this kind of thing's been a source of friction on some other shows I've done. It seems the special effects guys who are overlording the rest of the picture always want to jump on the bandwagon. But I didn't want to be a bastard to work with, so I said okay. I made a slush rubber cast of the chest-burster — without the tail — and filled it up with plaster and put a metal rod in it which had a hole on the bottom so they could bolt it into something. There was also a loose lower jaw with a pin through it, and a piece of wire to pull it open; but that's all. It couldn't do anything else.”

Nick Allder, meanwhile, fashioned a cantilever device designed to thrust the plaster chest-burster upward with considerable force. This, in turn, was positioned beneath the cutaway table, sandwiched in between John Hurt's contorted body and the underside of the fake chest piece which had been bolted securely into place.

“Once the creature was rigged up,” O'Bannon continued, “they stuffed the chest cavity full of organs from the butcher shop. Then they ran in a couple of big hoses — may an inch in diameter or a little less — to pump artificial stage blood. And during all this, Ridley moved about attending to the finest detail. I remember, easily half an hour was spent with him draping this little piece of beef organ so it would hang out of the creature's mouth. Once all that was done, they took a tee shirt that they'd cut the back off of, and then very carefully put John in it and draped it over the chest.”

“The tee shirt was one of the things that gave us the most problems,” Nick Allder recalled. “Obviously, the creature had to be able to burst through it, so we experimented with various kinds of chemicals and diluted battery acids to weaken the fabric. But Ridley didn't want it to just go *splat* on through. What he wanted was for the fabric to withstand the force of the mechanism for two or three quick punches before it finally burst;

Dallas, Kane and Lambert descend onto the planetoid surface to search for the source of the alien transmission. / H.R. Giger originally conceived the planetoid topography as rugged and hostile, with towering bone-shaped rock formations and deep chasms, but budgetary constraints imposed a much more modest concept. Shown here without benefit of the dust storm effects used in the film, the plaster-formed setting assumes a spartan appearance. Scenic paintings to the right add depth and scale. / The derelict's entryways were constructed in wood and plaster, and served as a link between the miniature and live-action photography. As with most of Giger's designs, they represent an aesthetic union of elements both organic and mechanical.

so we had to be very careful to rot the fabric just enough, but not too much."

Preparations continued until noon, at which time a call went out to the rest of the cast. The sight that greeted them was disconcerting, to say the least. John Hurt — or half of him, since the false chest ended abruptly at the waistline — lay on the table smoking a cigarette; the director and crew were bustling about in white coveralls; and three Panavision cameras, all shrouded in clear plastic, had been squeezed into position within the confines of the ship's mess. "The actors were a little uneasy," O'Bannon observed. "Normally you don't use that many cameras unless something's unrepeatable, and it looked like some incredible explosion was going to occur."

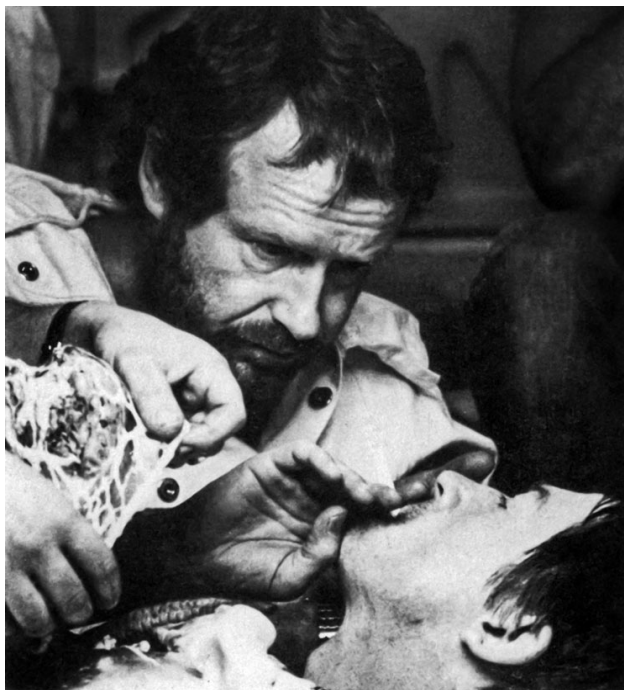
Ridley Scott's rationale was thoroughly calculated. "What happened on the table was, after all, just an effect, and we could reproduce it as many times as we needed to get it right. It was simply a matter of fiddling with it and shooting it again and again and again until it was perfect. The reactions to it were going to be the most difficult thing. If an actor's just *acting* terrified, he never quite goes over the top and you don't get that genuine look of raw animal fear. What I wanted was sort of a hardcore reaction, and I thought it best to give the actors an edge by not familiarizing them totally with what was going to happen. So when we started the scene, all three cameras were on the actors rather than the table."

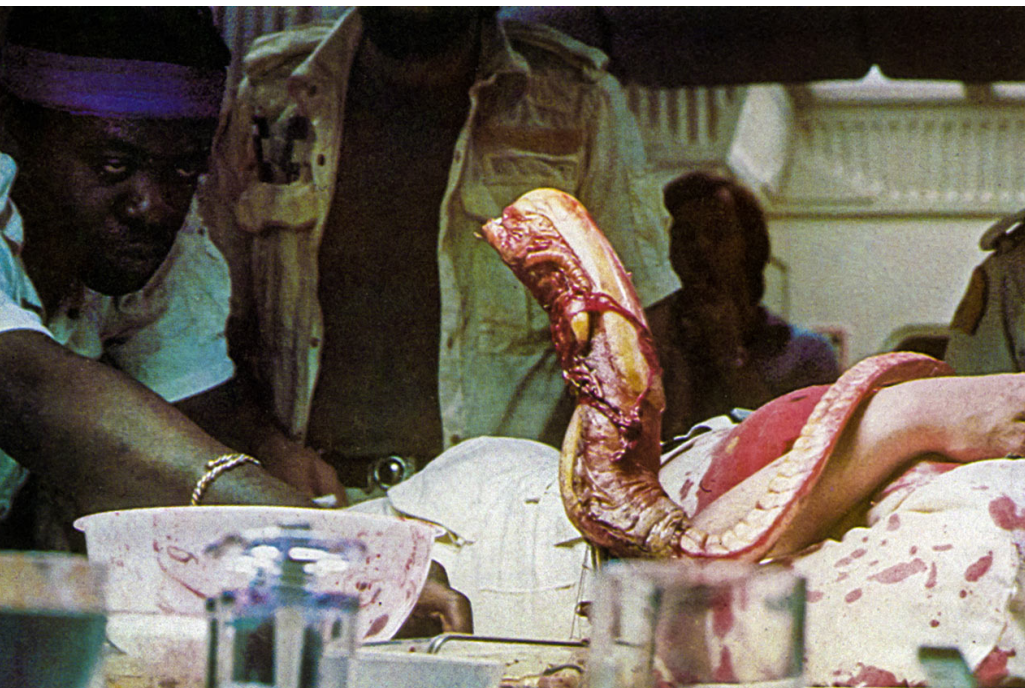
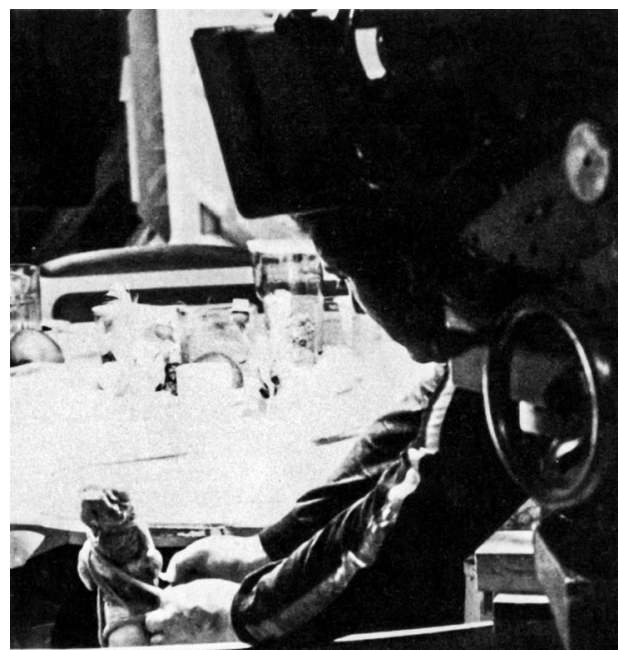
The effects crew was well represented during the chest-burster shooting. "I think we had about five or six operatives on the day we were doing that," Brian Johnson reflected. "One guy was operating the actual mechanism that pushed through the chest; a couple others were sort of holding John Hurt in the right position and working one of the pumps; and then we had other people rhythmically operating valves so the blood would come squirting out. The mechanism itself was an air ram that ran off compressed air — about a hundred or hundred-and-fifty pounds pressure — and we had it installed so that it levered the chest-burster up at the proper angle, but still left enough room in there for the blood pumps and various bits and pieces of offal and other stuff that were brought in fresh every morning. At the same time, we had to allow room for John Hurt to breathe because he was laying at an angle underneath the table. As a result, the chest-burster only came out about eight or nine inches, and in the start position the head was just below the surface of the chest cavity."

But all did not go according to plan. "The actors gathered around," Dan O'Bannon recalled, "and when they ran the cameras, John began working up to his level of agony and the rest of them started grabbing onto him and shouting like they had the night before. Finally, Ridley said, 'Hit it!', and the head started bumping against the shirt. But it wouldn't break through — the acid hadn't weakened it enough. There was blood spreading all over the shirt, though, and the thing was bumping around inside — and that in itself was enough to scatter the actors. They hurled themselves back to the walls of the set and

Preparations for the chest-burster sequence involved cutting a hole in the mess table and positioning John Hurt underneath so that only his head and arms were visible. A fiberglass chest piece was bolted into place and filled with blood hoses and animal entrails supplied by a local butcher shop. Three cameras were used — all covered with clear plastic. / For the actual thrust through the shirt, a plaster replica of the chest-burster was attached to a cantilever air ram. As the head emerged, a simple wire mechanism pulled the pivoted jaw open. / An effects technician dresses the chest-burster with animal organs as Ridley Scott and John Hurt confer between takes. / Once the emergence was recorded, the plaster chest-burster was replaced by a hand-articulated variant built and operated by Roger Dicken.







threw their hands up over their faces. But nothing happened, so they had to get another shirt and try again. This time, in addition to the acid, they made a lot of little slits with a razor blade, and the head did come out.

"They did about four takes. On one of them, one of the blood hoses happened to be angled straight at Veronica Cartwright's face; and as soon as that thing came out of there, this jet of blood, about three feet long, caught her smack in the kisser and knocked her right off her feet. She was drenched from head to toe with artificial blood, and she was screaming — it was pretty convincing."

"I was pumping something in the range of six gallons of blood on each take," Alder commented, "and it went literally all over the set. In fact, it took a good hour and a half to clean up between takes." In addition to a complete wipe-down on the set, cleanup required the rearrangement of props which had been scattered in the fracas and a full change of clothing for the cast. Meanwhile, the effects crew rerigged their ram mechanism.

"One of the problems," Dan O'Bannon observed, "was that the control was not very subtle. They'd hit the lever and there'd be a loud hiss, and this thing would just come shooting out of there like a jack-in-the-box and lock into position. Ridley was kind of bothered by that, and he'd say, 'Can't you make it seem like it's struggling out?' So they tried giving it little bursts of air; but when they did, it just kind of bounced up and down like a ballcock in a swimming mask."

Once the gruesome emergence of the alien newborn was recorded to Ridley Scott's satisfaction, the air ram mechanism was dismantled and Roger Dicken climbed under the table with his hand-operated chest-burster. "That was quite an experience," Dicken recalled. "I was in overalls and goggles; there were air hoses and blood lines running all over; and John Hurt was kind of half-crammed in there, too — so we were all legs and feet and kicking each other in the teeth. I worked the pistol grip and the jaw, and various effects guys helped out with the appendages and the saliva and all. Forcing it through the pre-lacerated shirt wasn't a problem at all because it had the metal armature running through it; so as far as I could see, the whole business with the plaster chest-burster and the ram was just to make things more involved. Obviously, it was only going to work for the initial thrust anyway — once it came out, it couldn't do anything. So what was the purpose? Just to break a tee shirt? Personally, I would have preferred to have seen it come out much more slowly — kind of struggling to pull itself free. But they wanted the shock effect of the sudden burst, so that's what they got."

After a few additional bursts through the shirt, John Hurt was allowed to extricate himself from under the table as the cameras moved in for closeups. Operating now in a less restricted environment, Dicken manually produced the creature's birth cry and first attempts to orient itself to its new environment. Casting about blindly and snapping its gleaming metallic teeth, the little assassin slithers across the gore-strewn table and disappears

before the horrified crew can recover and react.

"The table was a circular one," Dicken continued, "slit through the middle; and they raised one half up a couple of inches camera-side so they could shoot from a low angle without the gap being seen. I was lying on my back on a trolley underneath holding the chest-burster up through the crack; and then during the take, they'd just whip the trolley across the floor. The original tail was hanging straight down through all this. What you saw was another one I had made up which was fitted with a piece of polythene tubing, and then just simply tied around the bottom of the model and around my wrist. Effects technician Allan Bryce connected the tube up to a compressed air bottle and when the air was turned on, the tail thrashed about as the creature made its exit, knocking over cups and food containers placed along its path."

"After it left the table," Scott revealed, "I wanted to see it whack off down the corridor trailing blood and gore and a few intestines. We could have done it easily. The floor of the set was designed with special latticework to conceal the rails we'd need to mount it on. But we just couldn't get it in time, so I had to drop it." Nevertheless, a full afternoon and evening before the cameras yielded enough fragmented footage for Ridley Scott to fashion a convincing and gut-wrenched montage of explicit carnage — the only graphic excess in a film whose horrors, for the most part, were characterized by suggestion and indirection.

Of the three alien forms, only the face-hugger is shown in lingering detail. Drawing upon queasy primal fears of things that creep and crawl, the slimy miscegenation of insect, crustacean and snake succeeds utterly in inducing a response of stifling revulsion. "We wanted to be sure it looked like an animal," Ridley Scott explained, "so we designed it very much from the point of view of something which had just come out of the womb. For that reason, we decided to use natural flesh tone. We tried coloring it in various other ways and it always looked hokey — and less frightening, somehow. I think it's very effective now — the half armadillo, half hard-shell back; the pair of testicle-like lungs; and the real killer is that stinger tail."

The face-hugger was the second alien form to go before the cameras. The creature's attack on Kane would be left until late in the shooting schedule, but its unveiling in the *Nostromo's* autodoc was captured in the early weeks of principal photography. Only after Kane had been placed on the examination table and the remains of his helmet cut away, did the full horror of his encounter become apparent — clamped squarely over his face was the gruesome alien organism, held firmly in place by eight spindly fingers and secured by a long tail which constricted tightly around Kane's neck at the slightest hint of an attempt to disengage it. "You could leave that thing sitting on his face all day and nothing much would happen," said Ridley Scott, "but that tail gave it punch — made it alive. And articulating it was dead easy. We just covered the tail with vaseline to make it slippery, fastened a piano wire to the tip of it, and then pulled from below so it slid across his neck and tightened at the same

Nick Alder positions blood hoses and entrails around the plaster chest-burster. / The alien's escape was effected by splitting the table in half to create an open pathway, and then positioning Roger Dicken and his hand-operated chest-burster on a small trolley underneath. During the take, a separate tail was attached to a compressed air bottle and made to thrash about while technicians yanked the trolley across the floor. / Roger Dicken and his articulated creature. A metal rod extended from the nose of the creature down to a pistol grip mechanism by which Dicken could control the head movements. To open and close the jaws, Dicken pulled on a concealed wire attached to a ring around his finger. Other functions were activated by small air tubes connected to rubber squeeze bulbs.

time."

A key element in the face-hugger sequence was the realization for the crew that they were dealing with a creature infinitely more dangerous than even the ferocity of its initial onslaught had suggested. When efforts to pry the tenacious beast from Kane's face prove unfruitful, Ash and Dallas mount a more direct assault by attempting to amputate one of its fingers. At the first incision, however, a yellowish fluid oozes from the wound. Incredibly corrosive, it eats through the floor within seconds, penetrating two decks of the ship and threatening the hull before its virulence dissipates.

"What really bothered me about the whole idea of this thing running around on the ship," said Dan O'Bannon, "was why they didn't just kill it. Why didn't they spear the goddamn thing? Or shoot it with some kind of gun that wouldn't go right through it and penetrate the hull? Or why couldn't they get a bunch of long pointed shafts and drive it out into the airlock? I mentioned that to Ron Cobb, and he said, 'Why not give it extremely corrosive blood that would eat through the hull?' And I said, 'Well, that doesn't make much sense; but it would certainly make it very, very difficult for them to deal with it on board the ship' — so I put it in."

"I'd designed the face-hugger," Roger Dicken explained, "so that one of the fingers had a special joint where you could unclip it and take it off. For the acid scene, I made about six replacement fingers with tubes inside so we could cut into them with the laser and the acid would run out."

The task of actually devising a substance that would appear to eat its way almost instantaneously through the deck fell to the special effects department. "First, we had sections of the deck made out of styrofoam and painted silver," Brian Johnson revealed. "Then we produced a mixture of chemicals that actually was pretty corrosive — you wouldn't want to get it on your skin, you know. It was mainly chloroform and acetone, with some cyclohexylamine and acetic acid and one or two other things thrown in. And that stuff just ate right through the styrofoam, but it left enough color behind so it really looked like metal."

Roger Dicken disagreed. "To me the effect looked just like cellulose thinners on polystyrene. And I don't know why they did it that way, because several weeks before they were going to do that shot, I concocted a special mixture which I formed into the shape of a metal girder — just a few inches long, with rivets in it — and I took it to the studio and showed it to Ivor Powell and some of the other guys who were working on the movie. I also took along a small leg with a hollow tube in it and a squeeze bottle full of colored water. When I cut the leg with a razor blade, the water dropped onto my pseudo-girder and it immediately started to foam up and disintegrate. To my way of thinking, it looked very much like metal on the melt; but for some reason, they decided not to use it."

Once its life function is fulfilled, the face-hugger dies. Seeking some clue as to its nature, Ash inverts the bizarre parasite and

examines it minutely in the ship's science lab. In contrast to the formidable exoskeleton it had earlier exhibited, the creature's underside appeared totally unprotected, a mass of naked organs and exposed tissue. "You can't build something like that," Ridley Scott explained. "You could spend *months* on it, and it still wouldn't look right; so I sent a guy off to the market every morning and he'd come in with plastic containers of offal and lungs and some stuff we call Nottingham lace, which is the covering of a pig's tongue that they peel off like skin and people eat it. It is beautiful, though. In fact, it's so beautiful, it almost looks artificial. We also brought in bucketfuls of stuff from the local fishmonger. Then we had it cleaned and steamed — it was like an operating theater in there. Roger Dicken designed a rubber casing for it, and then Patti Rodgers would place the stuff in there and arrange it. She kept coming in while we were shooting saying, 'What do you think of this?' — and if there were strangers on the set, we'd get some pretty amusing reactions. The most interesting results, we found, came from arranging miniature squid, thinly sliced, with mussels and clams and two large oysters. Just staring at it was enough to make audiences uncomfortable, and that's what I wanted."

In late August, with only finishing touches yet to do, Rambaldi flew to London with three alien heads. Two were identical and fully articulated — one a primary; the other a backup. The third was a lightweight version, without mechanics except for the lips. For long shots requiring no articulation at all, studio craftsmen had struck an additional three heads from Giger's mold — including a soft-rubber variant to be used during some of the more elaborate stunt sequences.

With guidance from Ridley Scott and H.R. Giger, Rambaldi made minor alterations and completed the unfinished details. Highly polished chrome teeth were implanted into the jaw and tongue; and since Scott wanted them visible even when the mouth was closed, Rambaldi fashioned the lips from transparent rubber. Rambaldi also stretched rubber condoms between upper and lower jaws to serve as exposed tendons. When all the detailing was complete, H.R. Giger airbrush-painted it in characteristic blacks and browns. Finally, a smooth vacuum-formed plastic shell was fitted over the top of the head, enshrouding in translucence the nasal cavity and eyeless sockets which still suggested a human lineage. It no longer looked precisely like the sculpted prototype. Giger felt it had taken on a more apelike countenance, a fact which at first distressed him, but which he later reconciled to artistic license. In actuality, however, the Rambaldi alterations were minor and almost strictly a function of having to arrange the complex actuating mechanisms within an extremely confined area. Still remarkably akin to its original inspiration, the completed alien head was, by any account, an unfettered embodiment of *Necronom IV* — an unmistakable giant phallus, with teeth.

The alien head constructed by David Watling's firm was virtually identical in appearance; and even though it had been completed and delivered more than a month before Rambaldi's,

Kane's plexiglass faceplate — melted with a blowtorch — is cut apart, unveiling the alien face-hugger for the first time.

/ Roger Dicken constructed the rubber face-hugger over a fiberglass shell, with an aluminum armature for articulation. It was held snugly in place by rubber bands which ran under John Hurt's head and connected opposing fingertips. Air tubes introduced a rhythmic pulsation to the creature's testicles, and its segmented tail could be made to constrict simply by pulling on a piano wire affixed to the end. / In the autodoc set, Ridley Scott and Roger Dicken prepare for the face-hugger sequence.





it was never used in the film. "David Watling's machine was actually very clever," Ivor Powell attested, "but ironically, we never used it because there was no call to use it. Most of the alien shooting was finally done pretty close up, and therefore the cable system of Rambaldi's was much more practical. Remote control just isn't as subtle as a hand-operated mechanism. If we'd wanted a lot of long shots, though — with freedom from cables — the Watling head would have been very useful."

Concurrent with the construction of the alien head, modeler Eddie Butler and his crew of studio technicians had been hard at work transforming the remainder of H.R. Giger's alien sculpture into a rubber suit which could be worn by Bolaji Badejo. "The first costume was so cumbersome that the actor couldn't do a great deal of movement in it," said Brian Johnson. "And though Ridley never intended to be so explicit with the alien that you could stare at it for minutes at a time and see everything, he did want it to be fairly flexible. He wanted the creature to be able to roll up in a ball and that sort of thing. Well, they couldn't do any of that in the beginning — the costume was just too rigid — so there had to be considerable modifications."

The optimum solution to the problem came in the form of a suit comprised of a dozen or more separate elements. Over a one-piece black body suit, Badejo was able to pull on the leg pieces like a pair of pants. The torso section slid over his head, and the arms pulled on like sleeves. Rubber feet fit over his own, and the nonarticulated six-digit hands were worn like gloves.

An articulated tail, built by David Watling, attached separately. "The tail was more difficult than the head," Watling said, "as it was about seven feet long and had to operate without any external wires. The problem was resolved by examining the way in which a real tail operates and then simplifying the construction in order to produce the limited number of movements required. Basically, we used a real vertibrate construction, replacing muscles with wires. All together, there were more than six hundred separate parts. When it was finished, it was attached to a molded fiberglass plate which was firmly anchored inside the costume."

Once completed, the basic suit was augmented by a number of others designed for specific movements and camera angles, and was produced in sufficient numbers to facilitate cleaning and repairs. An additional variant, somewhat more diminutive, had to be constructed for stuntman Eddie Powell who doubled for Badejo in some of the more dangerous scenes. When finished, each suit was painted by H.R. Giger using his airbrush and a mixture of ink and acrylic paint. Roger Dicken found it ironic that a number of the most bothersome specifications he had been given to work with had been totally cast aside — most notably, the suit was no longer translucent, and the head had been scaled down by nearly half.

Rambaldi departed London after two frenzied weeks, leaving in his stead an old associate from Rome, Carlo DeMarchis. DeMarchis stayed for the duration, supervising use of the Rambaldi heads during photography, orchestrating required moves, and

training the technicians needed to manipulate the mechanical contrivances.

At its best, though, the creature was still far from perfect. "The alien was an immensely elaborate and detailed piece of work," Michael Seymour explained, "but we had to be *very* careful about how we shot it. And we had countless discussions about that, because in the end, if you held on it for more than a few seconds it became just another man in a rubber monster suit — and of course, that was unacceptable."

"The cables coming out of the head were a bit of a problem," Brian Johnson added. "We had to dress those so you couldn't see them and at the same time allow the maximum amount of flexibility. Also, we found that you could see the mechanism which operated the head. So that's when the goo appeared — the goo covered up the mechanism. We rubbed the whole head with K-Y jelly and also had it oozing out of the mouth. We must have used *gallons* of that stuff, because it drips off slowly and you're constantly replacing it." While the lubricant jelly did an admirable job of camouflaging flaws and making the alien look even more nauseating, its use tended to wash out the skin coloring. As a result, Giger had to repaint his creature after each day's shooting.

The first use of the full-size alien coincided with its initial appearance in the film. Brett, foolishly wandering off in search of the ship's cat, is the first to fall victim to the creature in its mature form, transformed beyond recognition to an awesome seven-foot engine of destruction. The encounter takes place in the lower recesses of the *Nostromo's* utility deck, in a towering chamber housing one of the ship's retractable landing legs. The forty-foot leg, left over from the earlier-photographed landing sequence, had been hoisted a few feet off the stage and the chamber constructed around it. To heighten its visual eeriness, criss-crossed shafts of light streamed through overhead latticework and water condensation trickled incessantly to the floor.

In keeping with his wish to instill the creature with balletic grace, Ridley Scott wanted to have it curled up, in total defiance of gravity, about ten or twelve feet up the side of the landing leg. Then as Brett entered the chamber, the beast would slowly unwind and swoop down, snatching the unsuspecting engineer and disappearing with him up the shaft.

During the filming, however, Scott came up with an additional embellishment. "Ridley brought me onto the stage," Nick Allder related, "and he said: 'I want Brett to get it now, but I don't just want the creature to dart out and menace him to start with. I'd rather have it reach out and sort of caress his head — almost kind of inquisitive at first. Then you see it squeeze up, and the blood starts running down Brett's face, and it cracks his head open.' So we ended up doing it almost on the spur of the moment. We ran blood tubes up into Harry Dean Stanton's cap and through his hair. Then, when the alien started squeezing, we started pumping, and the blood ran out and down his face."

The remainder of the sequence was somewhat more com-

When Ash attempts to sever one of the creature's fingers with a laser scalpel, its highly corrosive lifeblood oozes onto the floor and nearly eats its way through the ship. To get the shot, the effects unit fabricated styrofoam deck panels which dissolved almost instantly when exposed to a mixture consisting primarily of chloroform and acetone. For the underbelly shots, squid, mussels and oysters were carefully arranged in a hollow face-hugger shell.

For its first appearance, Ridley Scott wanted to have the full-size alien perched on one of the ship's retractable landing legs. To maintain the gravity-defiant position, Bolaji Badejo was suspended on a wire rig. Since the scene called for Brett to be swept from his feet and carried bodily up into the tower, a separate harness and wire rig had to be employed for Harry Dean Stanton as well. / Rambaldi's alien head as seen in the film. Separate manually-operated cables opened the jaws, curled back the lips, and extended the fanged tongue. Surgical jelly was applied in massive quantities to impart a slimy appearance and help conceal the mechanisms. / Lambert meets her death in the ship's cargo hold.

plicated. In addition to his already cumbersome alien outfit, Bolaji Badejo had to be fitted with a harness and wire rig in order to appear suspended on the side of the giant landing leg. The articulated tail, which was to slide between Brett's legs and hoist him up, had to be operated by overhead wires since its internal cable mechanism was not altogether successful. Then Harry Dean Stanton, too, had to be fitted with a flying harness so he could be lifted off the ground. Coordinating all the movements in a realistic manner proved to be an arduous problem, one that was never satisfactorily overcome.

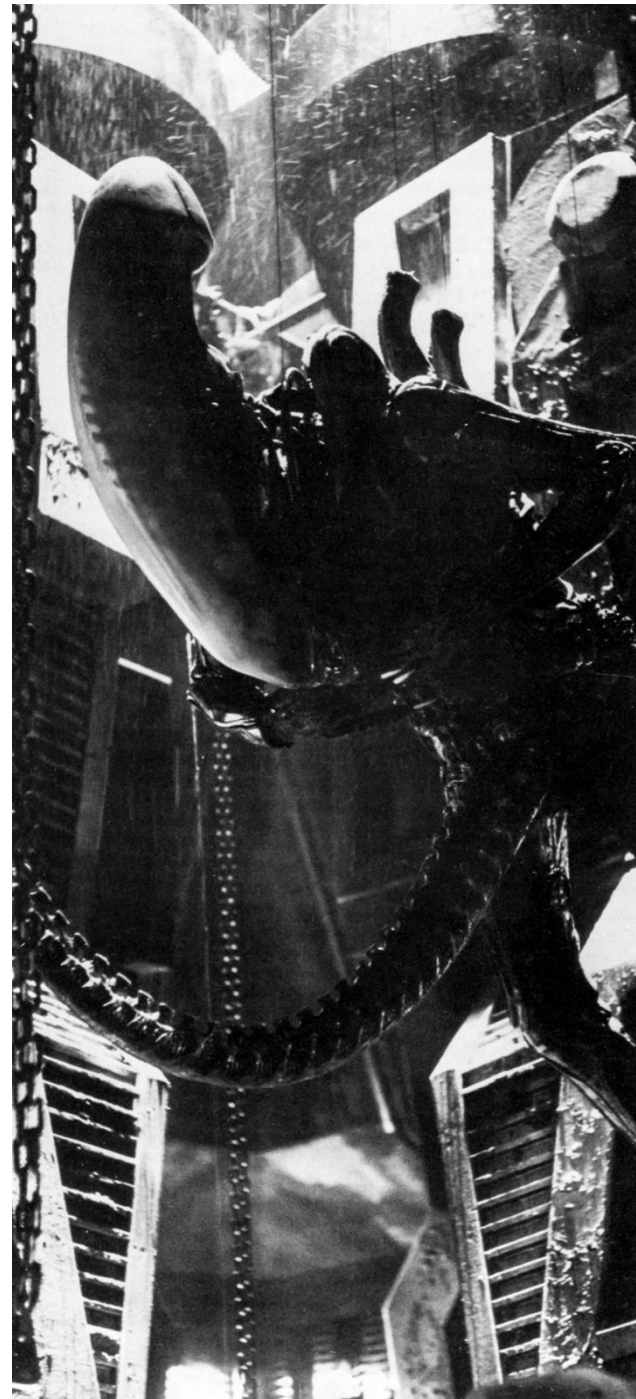
"We were really quite limited in what we could do with the alien," Nick Allder revealed. "At one point, the script called for it to run up and down the corridors like a human being; but when we finally got the finished costume, we stayed late one evening — at the end of a day's shooting — just to see what it looked like in the sets and to shoot a few tests. And of course, we found it would look ridiculous to see this thing running around — it would give the whole thing away immediately."

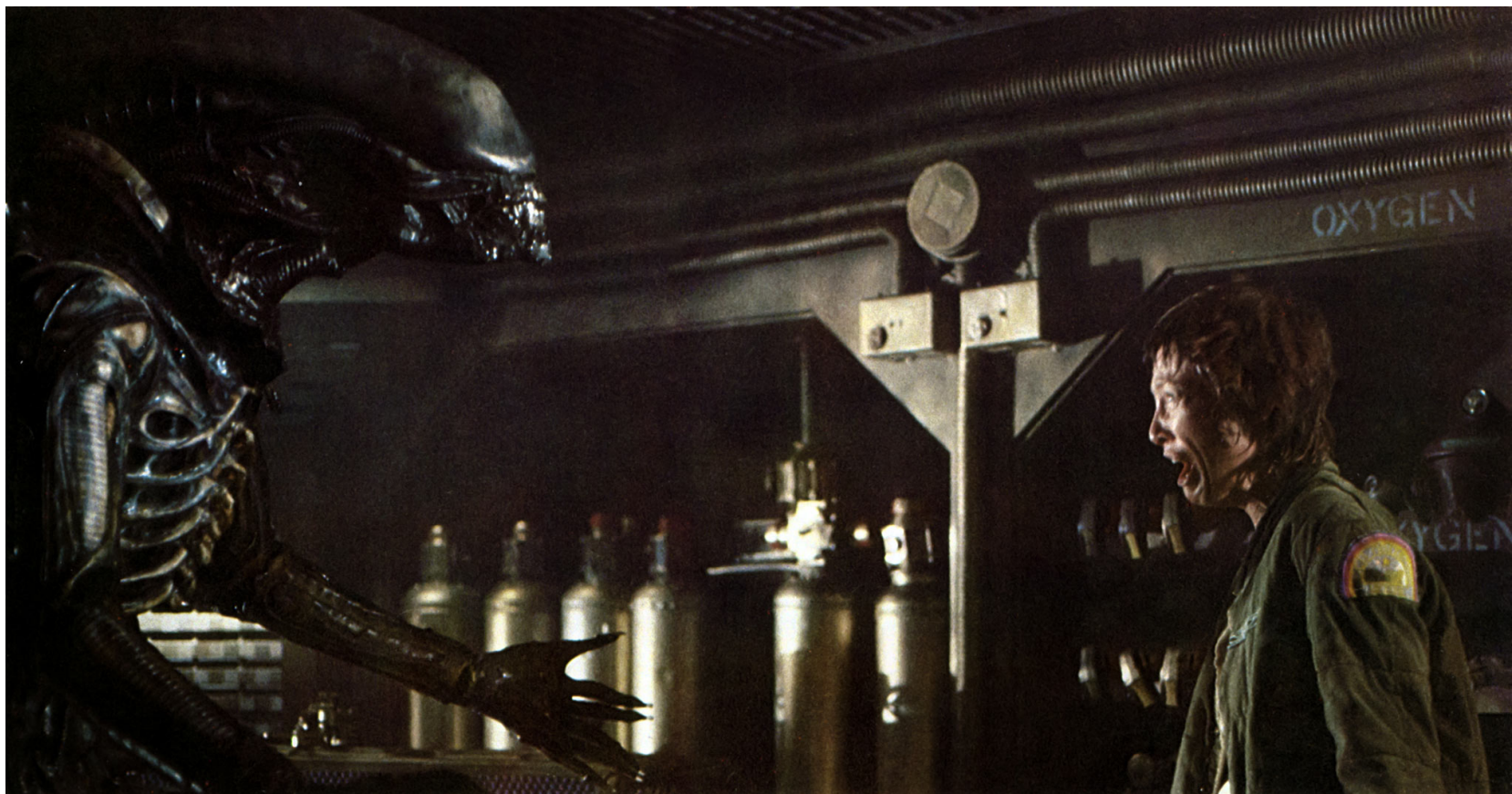
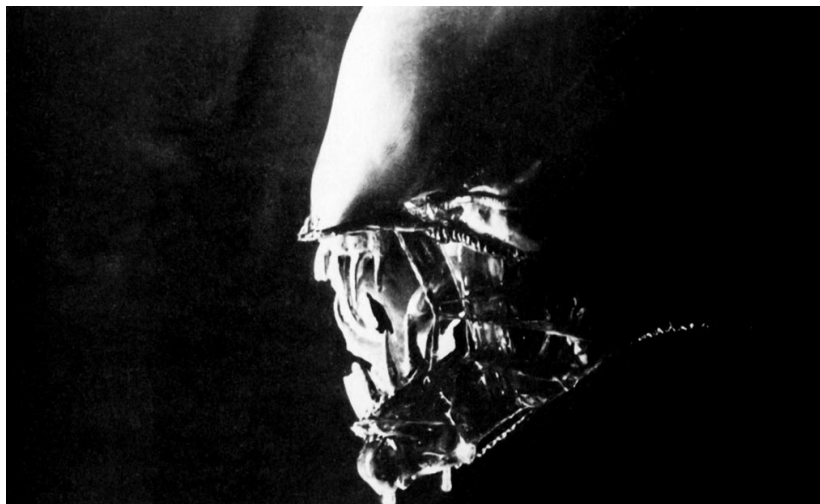
As a result, Ridley Scott's plans for the alien's second appearance were substantially modified. "What I wanted was to have really huge air ducts — taller, in fact, than the corridors in the ship — so that when Dallas first sees it in there, it's standing on the roof of this giant wind tunnel, suspended upside down. Then I was going to have it roar down the tunnel toward him, running and jumping full-circle around the walls." Since this concept proved impractical, however, Scott opted instead for the claustrophobia of a tiny ventilation shaft and a shock appearance by the alien marauder.

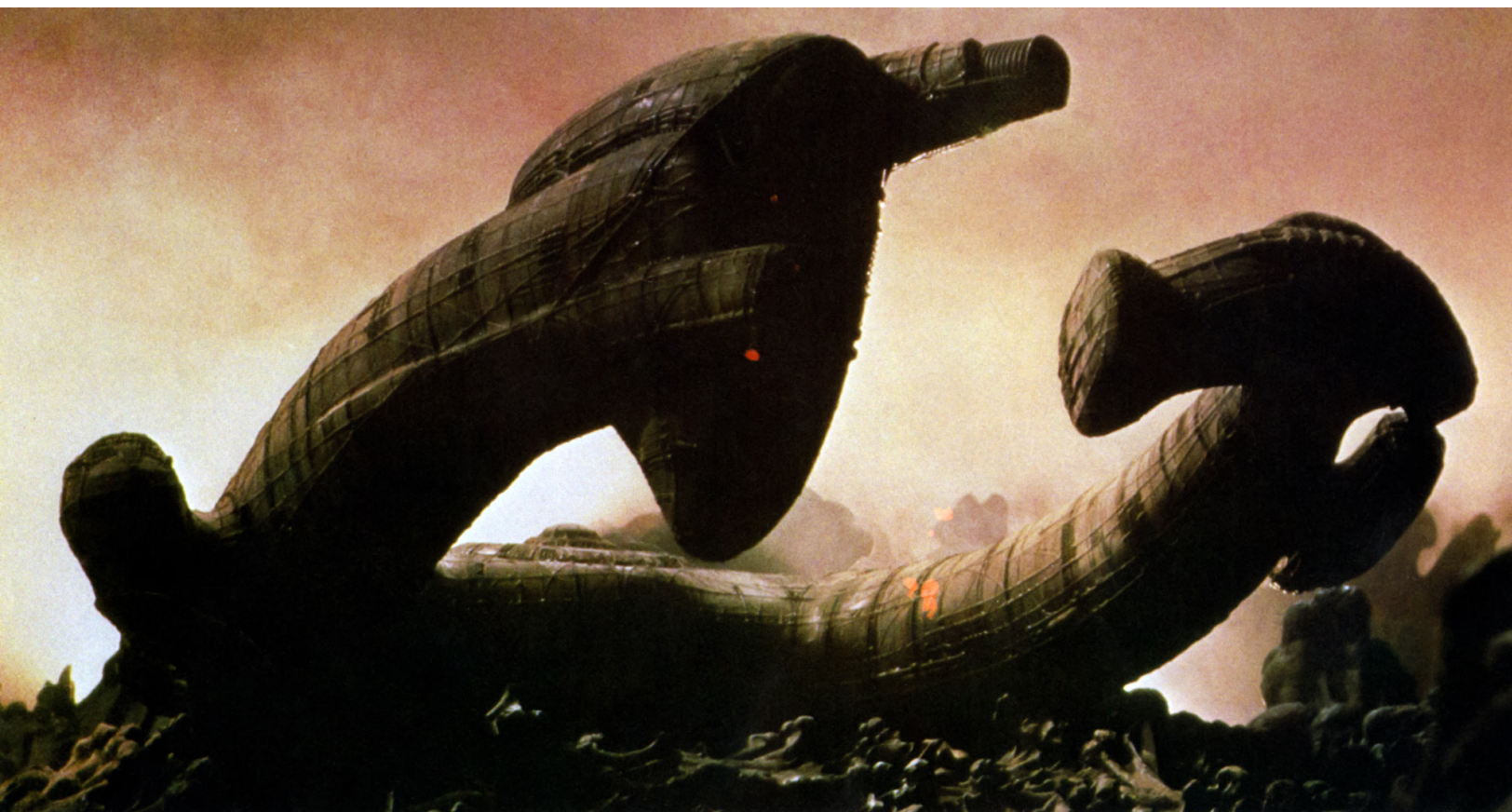
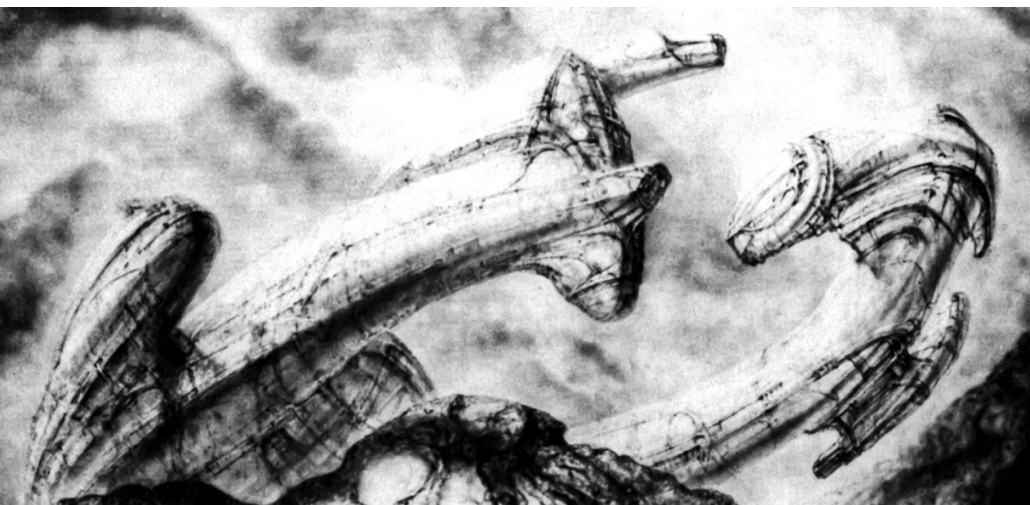
Other ideas were tried and abandoned. "At one stage," Scott recalled, "I wanted to have kind of a subtle movement in the creature's brain, so I thought maybe we could fill a pocket in the cranium with white maggots and let them crawl around in there. Even Giger went 'Eeyuk!' at that one. But I decided to try it, so I had these huge tins of maggots brought in. We couldn't make it work, though, because the heat from the lights would put the bloody things to sleep and they'd just lie there like spaghetti. We tried using Spanish fish — which look kind of like wireworms — but they went to sleep, too. So finally I had to give up. Afterwards, I thought we should have tried sprinkling LSD on sugar — because maggots love sugar. Then maybe we'd have gotten some reaction out of them."

With Kane and Brett decidedly dead, Dallas missing and presumed so, and the android Ash exposed and destroyed, the remaining three crewmembers decide to trigger the *Nostramo's* self destruct mechanism and escape in the *Narcissus* shuttlecraft. While Ripley readies the tiny vessel for departure, Parker and Lambert hasten to gather the coolant cylinders needed for its life support systems — but their mission is interrupted by the alien. The beast advances first upon Lambert, but when Parker shouts for her to get out of the way so he can use his flamethrower, it turns on him instead.

"What happens to Parker is simply a suggestion in the final film," Nick Allder explained. "I doubt if it's more than three or







four frames long. But I actually took a casting off Yaphet Kotto's head, and then constructed a dummy skull out of fiberglass — except for a section of the forehead which was done in wax. Since it was going to be a very large closeup, I made a special rig so we could mount just the alien's tongue and make it dart in and out and hit a specific spot on the forehead piece. Inside the skull, I put real pig's brains; and then we put special little barbed hooks on the end of the tongue. So during the shot, you actually saw it punch through the forehead and pull out the brain."

Lambert's fate was never specifically recorded, but in an earlier version of the script she was to have died as a result of an abortive attempt to trap the alien in an airlock and eject it out into space — an attempt which instead breaches the hull and causes explosive decompression throughout the ship. "Because of budget reasons and time, we just couldn't shoot it," Ridley Scott explained, "but I wanted Lambert to get sucked out of the ship through an opening about the size of a keyhole. Not a very heroic ending — but dramatic." A number of possible filming techniques were discussed, including a life-size inflatable dummy and a lot of fast cutting, but Brian Johnson was opposed to the idea. "Being sucked out of a tiny hole simply isn't possible, even if there's a vacuum on the other side. It would just get plugged up. You might get a helluva blood blister, but you're certainly not going to suck a whole human being through a hole that's only a sixteenth of an inch in diameter."

Although the alien sequences were central to the plot and involved extraordinary amounts of planning and choreography, they represented only a fragment of the production unit's total output, and many critical areas had yet to be resolved.

Once the alien was under control," H.R. Giger remarked, "Ridley asked me if I could design a spaceship not made by human beings. Well, how do you do that? I thought maybe it might look organic — something that could grow even, like a plant — but I didn't know exactly what it should look like. Then early one morning when I couldn't sleep, I got up and started painting, and the derelict ship was born in a few hours. It ended up like an aerodynamic bone with little technical stuff all over it, but it wasn't really anything I had planned — it just sort of ran out of my mind and my airbrush, which is not uncommon for me. Often I try to switch off my thoughts as much as possible and let the painting flow out spontaneously from my subconscious mind. I liked the derelict very much, and Ridley did also — but then they wanted it changed for several reasons. But I said I could not. Once I have a good design, I cannot change it to something I think is not so good."

"There's a great tendency in this business," explained Ridley Scott, "not to use the first thing you come up with. As a result, people often just work something to death — I've been accused of this time and time again. What we were looking for here was a totally alien-looking spacecraft. I didn't think it would be something with a lot of lights on it and stuff like that. I figured it would be like nothing anyone ever imagines; either that, or extraordinarily familiar and slightly archaic-looking. And Giger's

first drawing was just a knockout. I took one look at it and said, 'That's it.' Other people couldn't quite see it though, so I had to keep digging my heels in and saying, 'You won't get a better derelict — don't screw about with it.' You know, Giger is a special case; and when something's *that* good, you have to recognize it and just leave it alone."

"It was a wonderful design," Brian Johnson affirmed, "but as it turned out, we couldn't build it. It was like an Escher optical illusion. As a two-dimensional painting it looked very logical, but there was no way you could actually build it in three dimensions. To get a rough idea of the shape, we took about a nine-inch piece of polystyrene and then carved it with a little device that looks almost like a tuning fork with a wire stretched in between. When you heat it up, the hot wire just melts its way through the polystyrene and you can carve the right sorts of shapes very quickly. It's much quicker than clay, but you can only get a very basic shape. You can't get the sort of detail you can with clay. But somehow, the derelict form just didn't work, so I got together with Giger and we talked about some possible modifications. Then he went off and redid the drawing. From that we produced another polystyrene shape which he thought was pretty good."

"The full-size derelict was about twelve feet across and was produced over at Bray — almost entirely by Peter Voysey. It was also done in polystyrene, with a metal tube armature through it for support. It was covered with a fiberglass netting which was impregnated with a black epoxy resin-type substance; and then, on top of that, there was a thin skin of plasticene with the detailing worked right into it. The plasticene helped the model withstand the heat reasonably well so it wouldn't melt; and if we wanted to change the surface detail at any time, it was very easy because it never got hard."

The ponderous derelict was placed in a characteristically Gigeresque setting of plaster-covered bones and technical artifacts, and photographed by the effects crew in subdued lighting and diffusing smoke on one of the stages at Bray. For a long shot of the landing party approaching the vessel, three small puppet figures with lights on them were operated remotely. "They were only an inch and a half tall," Nick Allder revealed, "and they were mounted on a motorized track about eighteen inches long. They were pivoted so you could rotate them slightly from side to side by switching them on and moving the lever backward and forward. That rocking movement, and the fact that the miniature lights on the helmets also moved back and forth, gave them the appearance of walking; and they really kind of brought the miniature to life."

The giant ovoid portals to the derelict had been constructed in wood and plaster on the Shepperton stages. A matte shot, combining live-action footage and a painting prepared by Ray Caple under Giger's supervision, was produced as a connective link between the miniature ship and the full-scale entranceway, but was later judged superfluous and trimmed from the picture.

Less faithfully reproduced were H.R. Giger's designs for the

Ridley Scott's request for a derelict spacecraft of nonhuman origin led to an H.R. Giger design that appeared both organic and mechanical. / Giger's early concept for the derelict egg chamber was later simplified for reasons of economy. Working primarily in shades of black and brown, Giger wields his airbrush almost intuitively — often producing a large-scale, fully-detailed work of art in a matter of hours. / The derelict ship was constructed almost entirely by supervising modeler, Peter Voysey. Nearly twelve feet in diameter, the model was first formed in styrofoam over a tubular metal frame, and then covered with fiberglass netting and a thin coating of plasticene. The plasticene provided an ideal medium for building surface detail and helped shield the model from the intense heat of the studio lights.

alien landscapes. Great bone-shaped monoliths, combined with forms vaguely technological, again set the basic motif; but Giger's biomechanical vision of the planetoid surface was simply too grandiose for *Alien's* limited construction budget. "Studio landscape is bloody difficult," said Ridley Scott. "You're constantly staring at plaster rocks and saying, 'Christ, this doesn't look right.' I would have preferred to do some of it on location and then do a studio link. In fact, I'd been looking at some spots for another picture that would have been beautiful for *Alien*, particularly in Turkey where there are these pyramid-like dwellings — huge, mountainous structures which cover hundreds of square miles. Absolutely extraordinary. But it was a practical budget decision not to go away on location, and so we just did what we could in the studio."

Toning down the complexity of his design, Giger fashioned a miniature landscape using plaster, real bones and mechanical artifacts. His three-dimensional concept was then divided into segments and built to scale on the Shepperton stage. "The alien landscape was really just a collection of shapes," Michael Seymour remarked, "and unless one saw it only in carefully lighted conditions, it looked like exactly that. Obviously, when you're striving for believability, the last thing you want is a set that looks like a set." A number of factors contributed to conveying the desired illusion, however — most notably the skilled lighting of Derek Vanlint, and the fact that Ridley Scott staged his action at night in the midst of a raging duststorm which tended to diffuse the background imagery. "We had to be very careful," Seymour added, "because some of the shots on the landscape were initially devised as matte shots; so obviously we couldn't have smoke and mist and whatnot drifting into areas we were later going to be matting on."

The derelict interior was the last major set to be completed, due in part to construction delays posed by prolonged debate over its ultimate configuration. At issue was whether or not the ancient remains of a giant alien crewmember should be included as a central image for the sequence. "He was in and out, in and out, in and out," Scott explained. "I wanted him in, and so did Gordon Carroll and Ivor Powell — by then we'd become fully confirmed hardcore space freaks. But there were others who wanted it out, mainly for economic reasons. We were already over budget and running about three weeks behind schedule — which I don't think was unreasonable for that sort of film, personally. So at one point, it was going to be ditched; but we rigidly held onto it. We felt we had to have it in there as sort of a central element in the craft. I mean, to have them walk in there and find nothing — just a hole in the floor — was absolutely bloody pointless."

The initial designs for the alien ship and its inhabitants had been done back in Hollywood to Dan O'Bannon's specifications. "I conceptualized the derelict as a gnome's castle — colorful and interesting and bizarre as hell, but not morbid. Chris Foss did a wonderful painting of the ship, which is still my favorite. It was a beautiful, bronzed lobster-like thing sitting on the sand — very

technological, very odd-looking, very difficult to figure out quite how it would fly. For the inside, Ron Cobb did the skeleton — what they later called the space jockey — and it was just perfect! It had a very large cranium, and four or five eye sockets. Very small jawbone — no teeth to speak of. Of course, I expected it to look horrible when you first see it in the film; but then if you looked at it a bit closer you'd discover that it didn't have the large teeth or the mandibles or any of the other things that are characteristic of a carnivore — and then maybe you'd begin to imagine it as some totally nonviolent herbivorous creature sailing around in space."

But once Chris Foss' bronzed lobster gave way to H.R. Giger's flying bone, Ridley Scott felt convinced that Giger should also design the derelict interiors. Giger's guidance was fairly vague. "From the script I knew he was huge and had a hole in his chest, but that was all. Ridley suggested another of my *Necronom* creatures as a guide. They don't look much alike now, but it was a starting point; and the space jockey kind of grew up from there in bits and pieces. The creature we finally ended up building is biomechanical to the extent that he has physically grown into, or maybe even out of, his seat — he's integrated totally into the function he performs. My first sketch of it was a little small, but my painting everyone liked. From that, I modeled a miniature of it with Peter Voysey, and he did most of the sculpting on the large one. Peter was really excellent. We worked together closely all the while I was there, and he was able to understand my language very well and translate my paintings into three dimensions."

To build the colossal figure and the inscrutable apparatus to which it was inseparably linked, Peter Voysey and his assistants first fashioned a rough framework from wood. Then they sculpted the basic form in plaster and assorted pieces of ribbed tubing, building it up gradually to attain the rich detail present in the Giger painting. As the work neared completion, Giger added a few personal touches, primarily to the head, and then painted it. Finally, to emphasize the creature's slow decay, a thin coat of latex rubber was applied to the finished surface and then rubbed to simulate peeling skin.

"Giger's work was the most difficult to translate into three dimensions," Michael Seymour asserted, "but more for its scale than anything else. His actual drawings were very sculpture-like in a way, and with the enormous gifts of someone like Peter Voysey — who's an absolute master at modeling things up exactly as they're drawn — we were able to capture that quality quite well. So it was really the scale that gave us our biggest problems — everything we produced of his was just huge. The space jockey was something like twenty-four feet high before it was even mounted on its base, and our whole set on that stage was forty-five feet high. Originally, we wanted to build a completely circular set to surround that colossal figure, but there were economic problems. So in the end, I conceived the idea of building only half the set and then putting the creature on a revolving base. That allowed us to shoot it from one direction

A final decision to proceed with the alien space jockey was not made until late in the production schedule; but once it was, Giger's biomechanical vision was painstakingly translated into three dimensions by Peter Voysey and his crew. Over a basic framework of wood, the massive figure was fleshed out in plaster and detailed with pieces of ribbed tubing and other mechanical objects.

against the set, and then rotate it around to shoot the reverse angles. By doing that, it looked indeed as though we were in a circular set; but in fact, we were always facing the same section of wall.

"The wall to that set was also designed by Giger. His design itself was very complex, but there was a repeating pattern to it, so we were able to have sections of it sculpted by hand and then made into molds. From those, we could cast off as many sections as we needed in plaster and then knit them together. I think we used about a hundred sections in all.

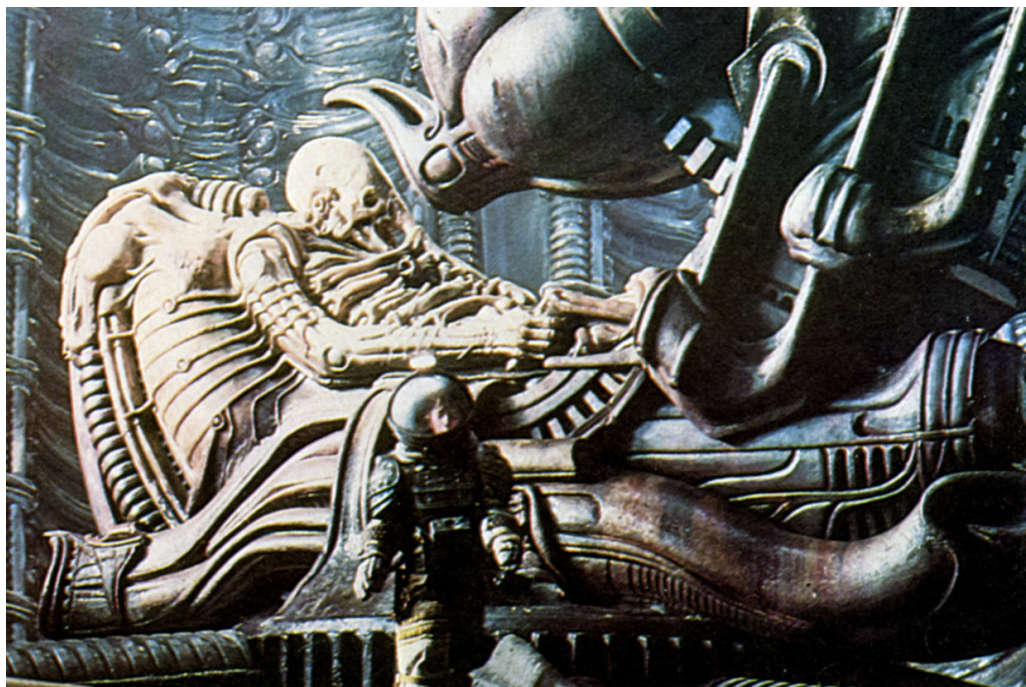
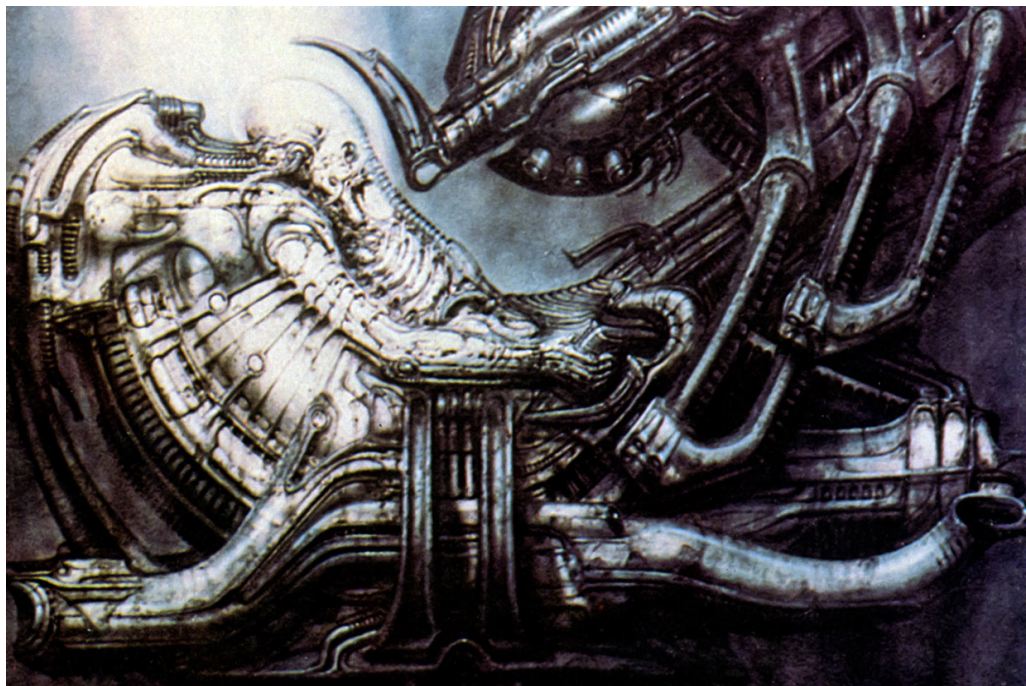
"Another idea I had to try and keep within our budget was to use the same basic setting for the space jockey and egg chamber. We did that by taking the whole platform the creature was revolving upon and mounting it on wheels. Ridley shot the topside footage in a single day — the discovery of the space jockey and John Hurt disappearing down the hole. Then they moved on to another set and we pulled out the circular platform with the creature on it and in its place built the area where the eggs were."

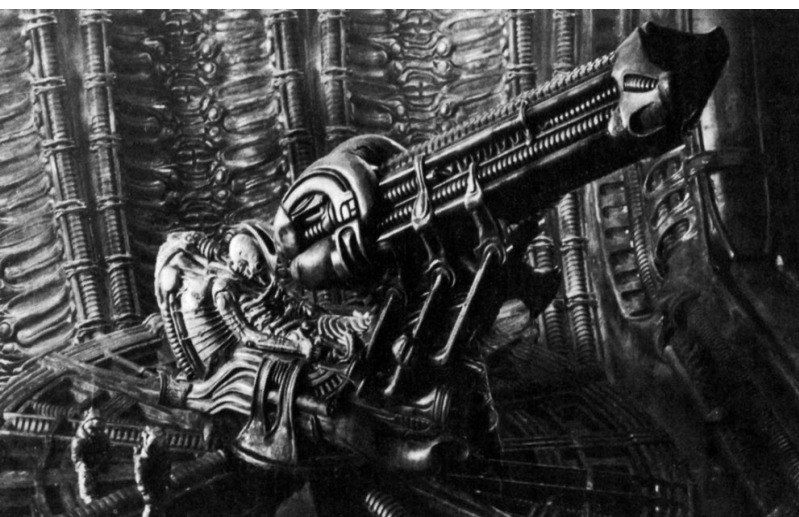
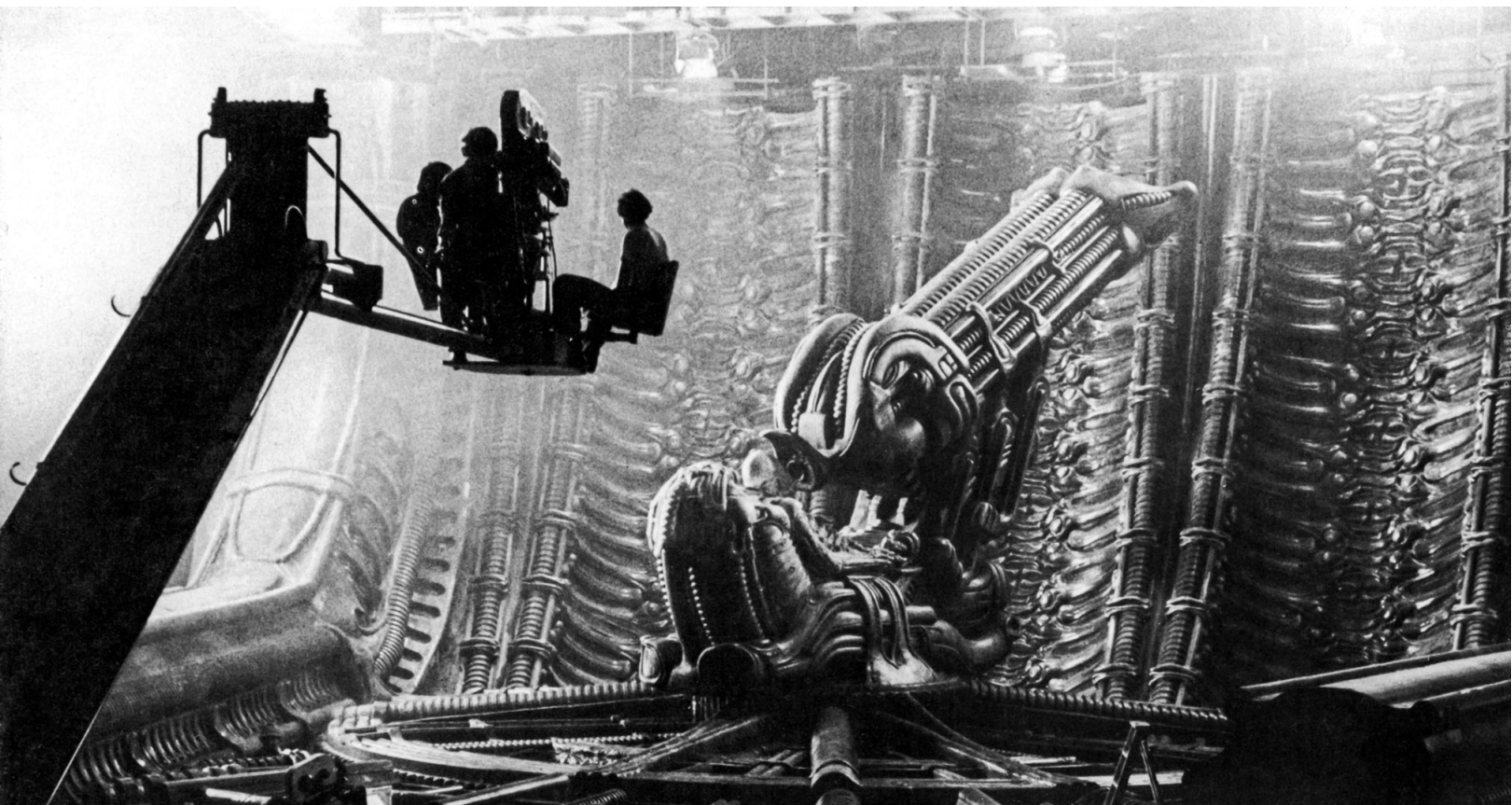
Redressing the space jockey set to double as the egg chamber involved extending the connective pieces which divided the organic-looking wall sections, covering the floor of the set with swirls of painted plaster, and then embedding them with dozens of egg-like spores. A diminishing-perspective matte painting completed the illusion.

The primary egg from which the face-hugger launches itself onto Kane's face was fabricated by H.R. Giger. Its basic design differed only slightly from the early cutaway he had painted a year before for Dan O'Bannon. The opening, however, had been modified. The original's intended similarity to a vagina, which Giger thought altogether appropriate, was a bit too explicit for the producers; so at their request, it was altered to a more acceptably nondescript crosscut. A hydraulically-driven mechanism to open it was devised by Nick Allder's effects crew.

"My original idea for the sequence was cut for budget reasons," Ridley Scott revealed. "My storyboard had Kane going down a long tube and then emerging into this massive chamber through a hole in the ceiling. Before he does though, at the bottom of this tube he finds a very thin membrane which he cuts through and this faint breeze drifts upward as he descends into the blackness. But he can't see anything, so he says, 'I'm going to light myself up' — and what I wanted were thousands of tiny pea lights stitched into his suit so we could light him up like a Christmas tree and have him hanging there from the roof of this cavern, like some beautiful chandelier. I thought it would be a marvelous image.

"But since that whole approach was out, I wanted something to replace the membrane, which I saw as kind of a biological alarm which triggered a response in the eggs — they all come awake and sit waiting to be touched, basically. We finally settled on a laser which was mounted so it would scan just above the eggs and give us this sheet of blue light. We could have done a lot more with it, but we didn't have time. As it was, we only had







about half a day to test it, and then another day and a half to shoot the whole bloody sequence."

"It was a fairly strong scanning laser," Brian Johnson elaborated. "It belonged to The Who rock group — they use them in pop concerts and such — and it operated at about three thousand and cycles per second with a sweeping arc of about fifty or sixty degrees. Basically what's happening is there's a mirror in there that's oscillating three thousand times a second. If you could stop the mirror you'd get a single point of light, but when it's moving it's not dangerous because you're subjected to the power of the laser for such short bits of time. Since your laser's scanning so fast and your camera's only running at twenty-four frames per second, you get quite a number of scans on one image. The light level is very low, though, so everything in there had to be shot absolutely wide open. And we had to use a lot of smoke; otherwise it doesn't show up at all because the beam's only bright when it's actually touching something."

Shrouded in mist and severed by the laser's pale blue light, the egg chamber provided an appropriately eerie setting for the first of *Alien's* many shriek-inducing moments. Tension builds as Kane breaks the beam and restless movements inside the translucent eggs signal the awakening of whatever lies within. When one egg opens and the foolhardy astronaut leans over to peer inside, the result is totally predictable, but by no means less shocking. "I wanted it to happen so fast you could never really see it," Ridley Scott explained, "like a snake when it attacks. I wanted great violence; and I wanted it totally, absolutely lethal. That's the whole reality of a creature like that. To get the effect I wanted, we placed an explosive charge inside the egg. Over that we put about forty feet of pig's intestines — connected to an airline but deflated and coiled around the top of the opening. Then we laid Nottingham lace around the sides. When the explosive charge went off, we hit the air at the same time and the intestines went *whoosh!* If you run the film through slowly, you can see the intestines billowing out like delicate gossamer pipe with beautiful markings. At speed, though, it's lightning-fast. There are actually four very specific cuts in there, but it all happens so quickly the effect is almost subliminal."

"All the shots leading up to the attack were done at Shepperton," Nick Allder added, "but the actual point-of-view explosion was done later at Bray as an insert. We mounted the egg upside down on the stage, and then shot up into it. After all the intestines and membranes were blown out, we got a face-hugger which was made of rubber and fitted it to a glove. Then we had a guy climb up on top and thrust his hand straight down through the base of the egg and actually wrap the face-hugger right around the lens of the camera. Everything was so fast, though, that when the two pieces were cut together it looked like one continuous motion."

The last days of principal photography at Shepperton were reserved for Ripley's final confrontation with the alien. Armed with little more than her wits, Ripley at last succeeds in ejecting her adversary from the shuttlecraft by blowing the main hatch

Production designer Michael Seymour suggested that the space jockey be mounted on a rotating platform so that only a small portion of the background wall would need to be constructed. Then, by rotating the figure, as dictated by camera angles, the impression of its being situated in a circular chamber could be sustained at a fraction of the cost. / The Nostromo landing party discovers the remains of an extraterrestrial crewmember within the derelict ship. / Dallas examines the alien being's curiously-exploded chest. / H.R. Giger added many finishing touches to the space jockey, and also painted it. / After the painting was completed, Giger and Peter Voysey applied a thin coat of liquid latex and then rubbed it lightly to suggest decaying skin.

Once the space jockey shooting was completed, the rotating platform was removed and the set redressed to double as the egg chamber. / To represent the biological alarm mechanism which is triggered when Kane stumbles onto the chamber floor, a scanning laser was installed at the rear of the set. In order for its pale blue sheet of light to be visible, the sequence had to be shot in a smoke environment at very low light levels. / Ridley Scott briefs John Hurt as one of the effects technicians drapes animal intestines from the alien face-hugger. The face-hugger — one of three dummy models made by Roger Dicken — had flexible wire in the fingers so they could be bent into any position. / For most of the production shooting, Bolaji Badejo wore a lightweight nonarticulated version of the alien head. Rambaldi's cable-activated head was reserved primarily for closeups.

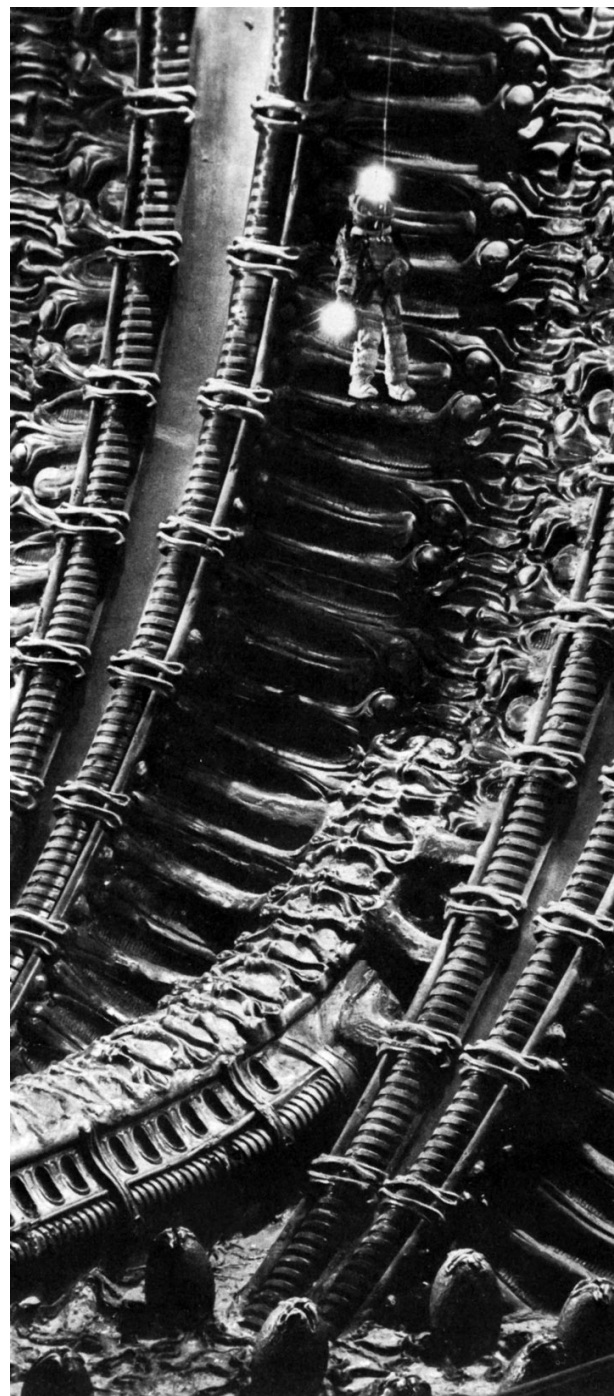
and firing a grappling iron squarely into the creature's midsection. But even at that, the alien starts pulling its way back along the trailing cable which runs from the firmly-lodged iron up to the shuttle. When it grasps ahold of one of the engine ports, however, Ripley engages the thrusters.

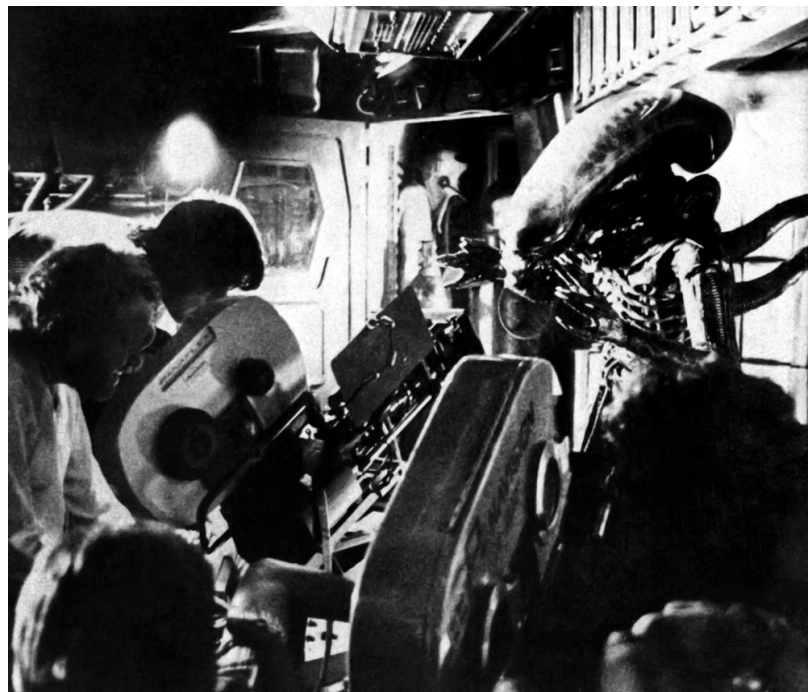
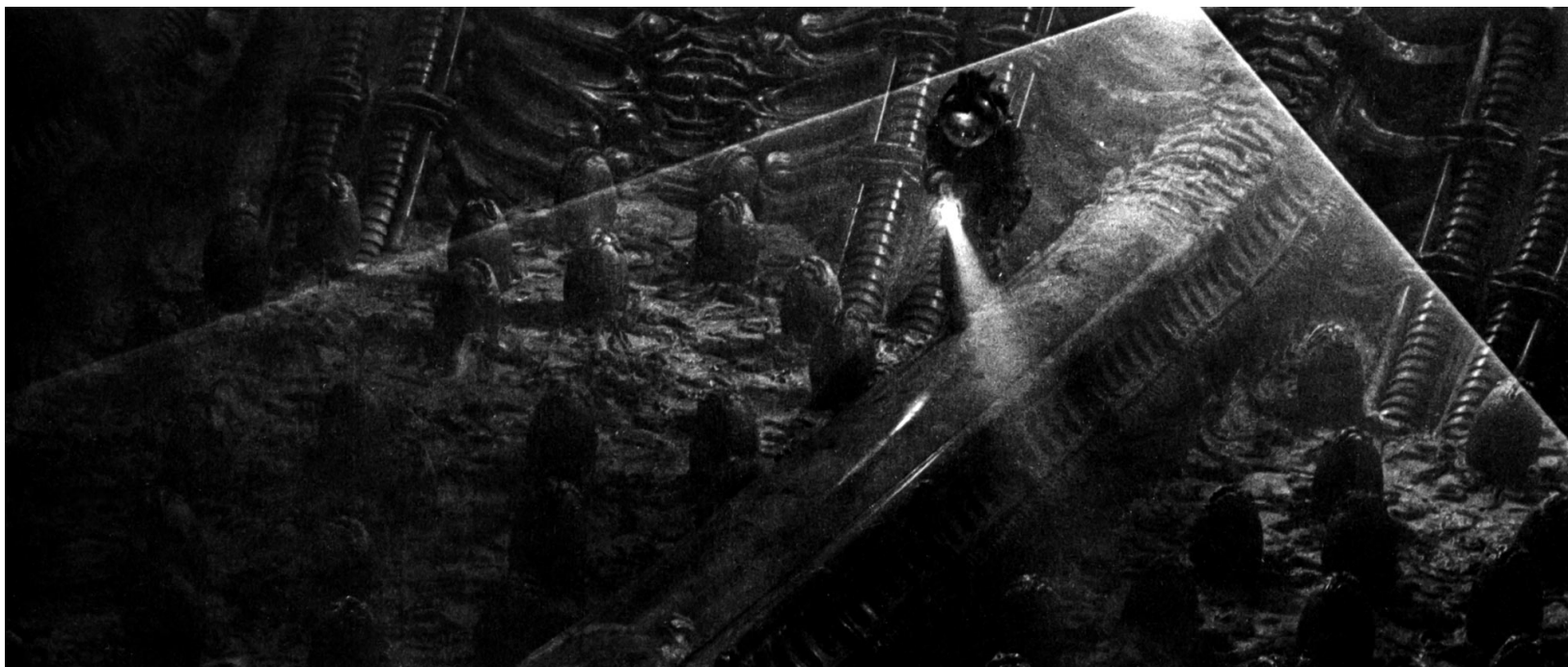
"At the very beginning of the picture," Nick Alder recalled, "we were talking about actually having fire and CO₂ and God knows what else in the engines. But then, when we were shooting the scenes where Brett gets it in the leg locker, Ridley was looking for kind of a strange visual touch to enhance the atmosphere — and that's what really led us to a final solution for the engine effect at the end. We started out putting steam and smoke and various other things into that leg area, and it wasn't quite right. So for no other reason than just to see what it would look like, I decided to try drops of water. And Ridley said, 'Yes, that's exactly what I want.' So we had this gentle dripping coming down, and during one of the shots Ridley kind of panned the camera up into the roof, and what you saw were all these water droplets falling — very heavily back-lit — and it was a really beautiful effect. So when it came time to do the shots where Ripley destroys the alien, we built the tail section of the *Narcissus* as a false-perspective piece and hoisted it up to the top of the stage so that the camera was looking straight up at it. We had a stuntman in the suit, and we just literally opened the hatch and let him drop through. But for the engines we used very high-pressure water sprays, heavily back-lit. It was quite an unusual effect, and we could actually have a real guy suspended in there without doing any damage to him or the set."

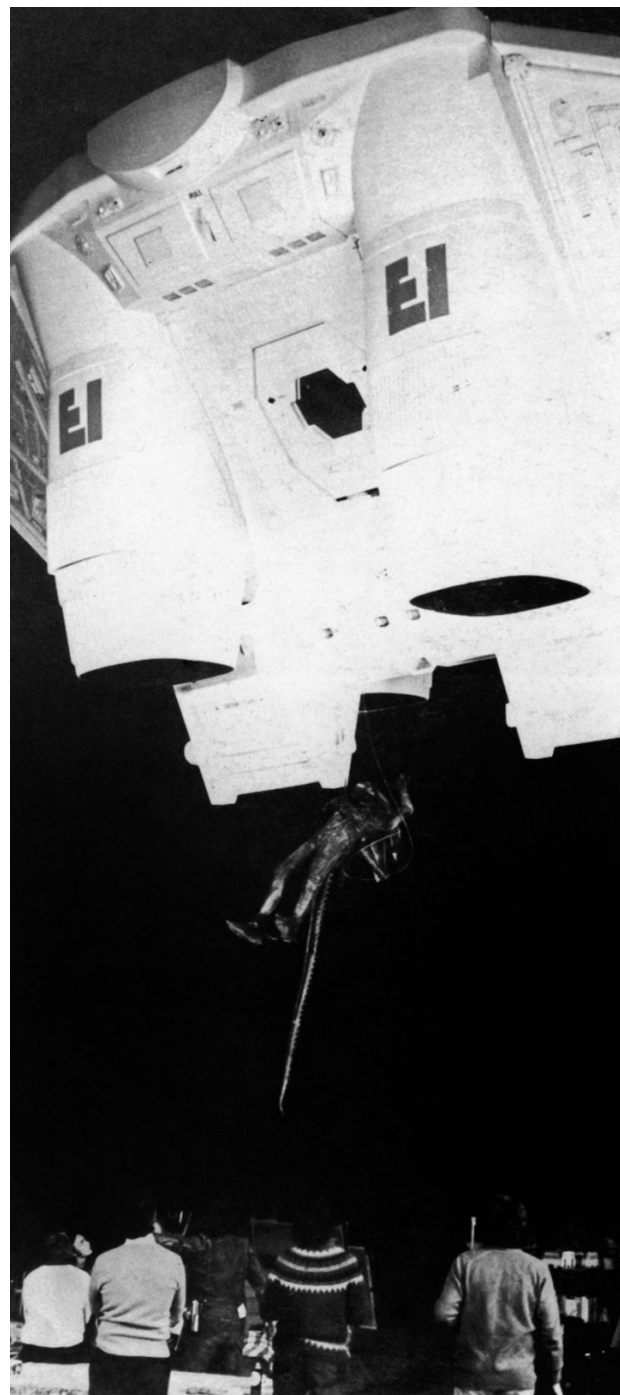
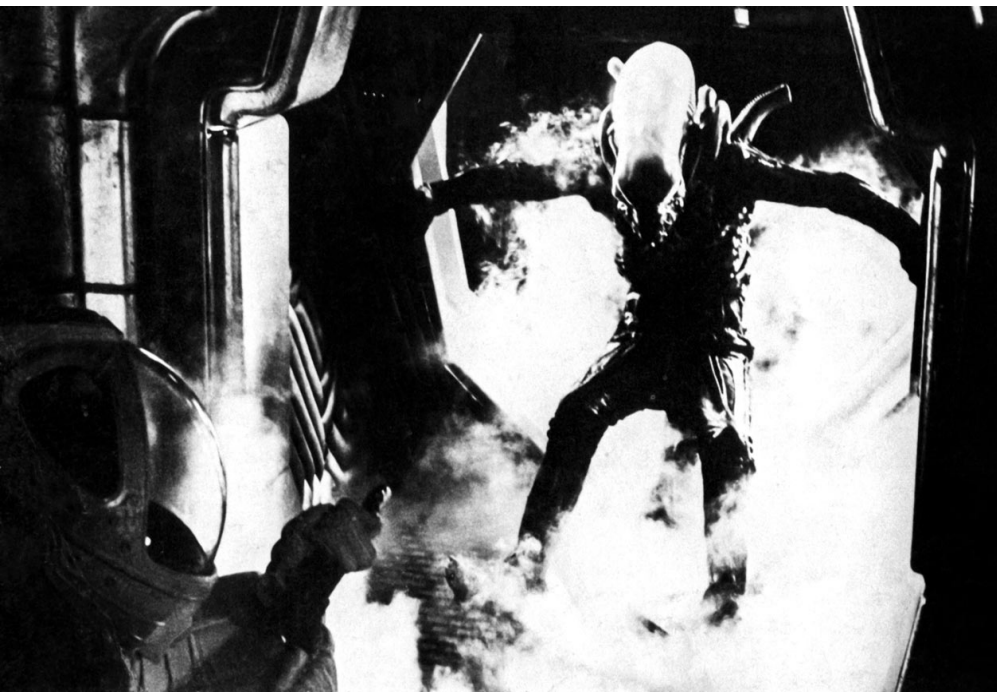
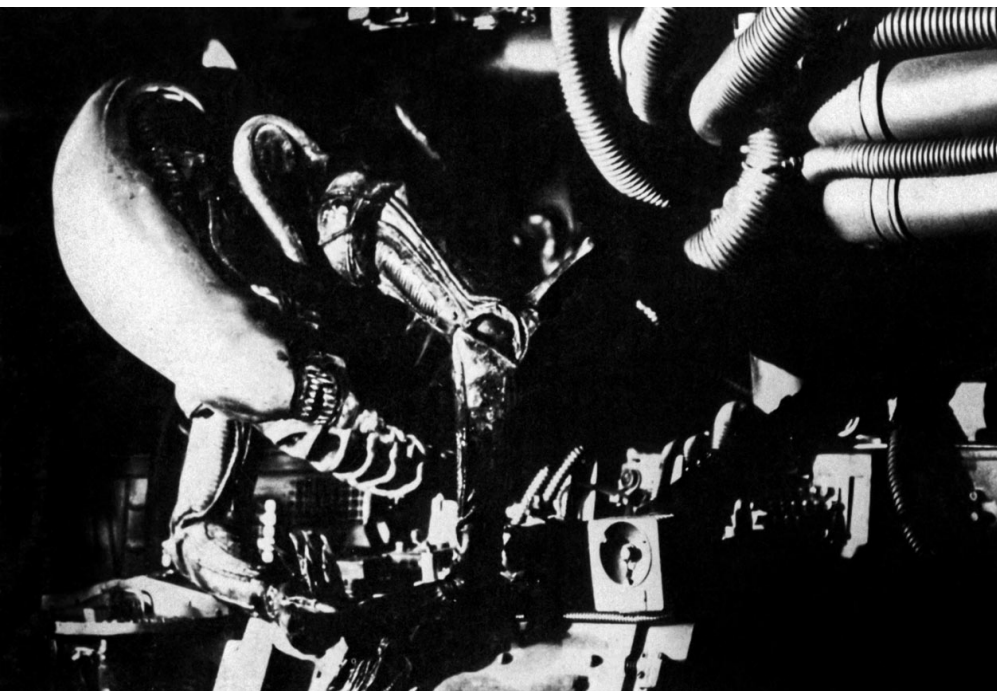
By the time principal photography wrapped in late October, most of the miniatures and models had already been constructed — including three versions of the *Nostromo* ranging in length from twelve inches to fourteen feet. Brian Johnson — who had been doing double duty throughout — at last departed for northern California to set up the special effects unit for *The Empire Strikes Back*, leaving Nick Alder in charge of *Alien* postproduction activities at Bray. Ridley Scott shifted over to Bray as well, transferring his editorial operation to the satellite studio in order to facilitate his personal involvement in the remaining effects work. Although a considerable amount of model photography had already been completed, nearly all of it was reaccomplished under Scott's supervision once he had the opportunity and the time to more fully exercise his directorial prerogatives. As a result, the protracted model work, along with numerous accompanying inserts, kept the effects unit fully engaged until February.

As editing progressed, Ridley Scott came to rely more and more on the power of suggestion. Enormous amounts of alien footage had been shot, but successive cuts contained less and less of it. In the aftermath of two overly-effective sneak previews, the picture was trimmed by an additional eleven minutes and toned down even further.

One major segment, cut from the film just before its release, would have provided the final narrative with some sorely needed









exposition. Ripley, alone on the *Nostromo* with the alien annihilator, hears a sound coming from one of the ship's storage areas. Flamethrower in hand, she enters the compartment where to her horror she discovers Dallas, partially devoured yet still alive, glued to a niche in the wall with a sticky pitch-like secretion. Even more ghastly, though, is the accompanying evidence of a rationale for the alien's implacable carnage — on the opposite wall, what little remains of Brett is gradually being transformed into one of the alien spores. Choking with fear and revulsion, Ripley accedes to her captain's plea for an act of mercy and incinerates the entire compartment.

"We used long lenses for the first part of the shot," Brian Johnson explained, "so we could still use Tom Skerritt without the flamethrower going anywhere near him. Then for the actual incineration, we went to another cut and substituted a dummy." Nick Alder, who ended up having to fabricate replicas of nearly everyone in the picture, devised an articulated mannequin from a casting taken of Skerritt. "For the majority of these animated people, I like to use miniature hydraulics," Alder elaborated, "either liquid- or air-driven. These were mainly air-driven, and we cabled them in through the back. The actual controls you could play almost like a typewriter; so when Sigourney Weaver sprayed the dummy with the flamethrower, we were able to animate the body as it burned."

"That sequence was quite spooky, and it actually worked very well," Ridley Scott asserted. "I liked it because it was a brief way of explaining what had happened on the derelict, and what was now happening on the *Nostromo*. And I think it provided some explanation for the alien's killing spree — like a butterfly or an insect, it has a very limited life span in which to reproduce itself. It also helped explain why it didn't attack Ripley in the *Narcissus*. Its days were over. Like a chameleon, it had found a protective corner in that ship and was working itself in there to die. So in that respect, it would have been nice to have kept that footage. But it really killed the pacing. By then, Ripley was the only one left on board and everything was moving very fast — and it just slowed down the drive. So I cut it out."

Two years to the day after *Star Wars* burst onto the scene, *Alien* was launched into the public marketplace. As many of its detractors were quick to proclaim, *Alien* represented no pinnacle of originality. Its roots lay deep in an all but extinct subgenre of cinematic potboilers, produced for peanuts and relegated to double bills and Saturday matinees. But as *Star Wars* had done with a similar subgenre, *Alien* transcended the form by infusing it with elements its progenitors generally lacked — an adequate budget and a versatile corps of imaginative and highly-skilled craftsmen. The result was a thriller both strikingly stylish and patently manipulative. Rarely had hard technology provided such an apt springboard for nightmare imagery. And never before had extraterrestrial lifeforms and environs been so convincingly represented and seemingly remote from human design. 20th Century-Fox had yet another summer blockbuster on its hands.

Aroused from near-dormancy, the alien marks Ripley as its final victim. For this sequence, the translucent head shell was painted a silver-gray to more closely match the panels and ducts into which the creature has lodged itself. / Ripley prepares to fire a grappling iron into her adversary. / For the alien's final scenes, a false-perspective mockup of the Narcissus tail section was constructed and hoisted up to the ceiling of the stage. Engine effects were obtained by forcing intensely back-lit jets of water through the exhaust ports. / In a sequence cut from the end of the film, Ripley finds Dallas alive, but glued inseparably to a corner in one of the ship's storage compartments. More horrifying, though, is her concurrent discovery of a rationale for the alien massacre — on the opposite wall, what little remains of Brett is being transformed into an alien spore.

